

*Baseline Human Health Risk Assessment
Swan Island Upland Facility Operable Unit 1
Portland, Oregon*

Prepared for:
Port of Portland

March 3, 2009
1115-06



Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

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Executive Summary

This report presents the results of the baseline human health risk assessment (HHRA) for Operable Unit 1 (the Facility or OU1) at the Swan Island Upland Facility (SIUF) in Portland, Oregon. The baseline HHRA was completed in accordance with the work plan and subsequent correspondence, reviewed and approved by the Oregon Department of Environmental Quality (DEQ), and relevant guidance.

The Facility consists of a level, 57-acre parcel on the northwest end of Swan Island. Between 1942 and 1949, the United States had the Facility used for a variety of ship building, ship repair, and related industries. In 1949, the Port of Portland (Port) purchased the shipyard assets and developed and used the Facility for ship repair and related activities. After Portland Shipyard LLC (Cascade General) purchased the Facility in 2000, ship repair and building activities have continued to the present.

Based on a thorough review of historical activities, a remedial investigation (RI), including soil and groundwater sampling, was conducted at the Facility. The contaminants of potential concern (COPC) at the Facility were petroleum hydrocarbons, metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs).

The risk assessment evaluated reasonably likely exposure pathways and receptors based on an evaluation of land and water use. The land use evaluation indicated that current and future land use is Industrial. There were no identified water uses except recharge to the river. Based on these uses, potential receptors were Occupational, Construction Worker, and Excavation Worker populations; exposure pathways evaluated included direct contact with soil and inhalation of vapors from soil or groundwater. The results of the baseline risk assessment are summarized below.

- **Non-carcinogens.** For receptors and pathways evaluated, the calculated hazards were less than the acceptable hazard level of 1. Estimated hazard levels ranged from 0.0001 to 0.02 for the Central Tendency estimates and from 0.0001 to 0.1 for the Reasonable Maximum Exposure estimates.
- **Carcinogens.** For receptors and pathways evaluated, the calculated excess lifetime cancer risks met the acceptable risk levels (exposure to arsenic was above the acceptable risk level, but arsenic was detected at background concentrations). For chemicals detected above background concentrations, estimated excess lifetime cancer risks are summarized as follows:
 - For individual chemicals, the acceptable risk level is 1×10^{-6} . The estimated excess lifetime cancer risks ranged from 6×10^{-13} to 2×10^{-7} for the Central Tendency estimates and from 1×10^{-12} to 8×10^{-7} for the Reasonable Maximum Exposure estimates.
 - For multiple chemicals, the acceptable risk level is 1×10^{-5} . The estimated excess lifetime cancer risks ranged from 1×10^{-10} to 2×10^{-6} for the Central Tendency estimates and from 3×10^{-10} to 3×10^{-6} for the Reasonable Maximum Exposure estimates.



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List of Acronyms and Abbreviations

Argeement	Voluntary Agreement between Port and DEQ for RI, Source Control Measures, and FS, dated July 24, 2006	µg/L	Micrograms per Liter
bgs	Below Ground Surface	mg/kg	Milligrams per kilogram
BWTP	Ballast Water Treatment Plant	OAR	Oregon Administrative Rule
CGF	Coarse-grained Flood Deposits and Upper Troutdale Formation	OU1	Operable Unit 1
CGSRY	Cascade General Ship Repair Yard	PAH	Polycyclic Aromatic Hydrocarbon
COI	Chemical of Interest	PCB	Polychlorinated Biphenyl
COPC	Chemical of Potential Concern	PCE	Tetrachloroethene
CSM	Conceptual Site Model	Port	Port of Portland
CT	Central Tendency	PSY	Portland Shipyard
DEQ	Oregon Department of Environmental Quality	RBC	Risk-Based Concentration
ECSI	Environmental Cleanup Site Information, a DEQ Database of Cleanup Sites	RBDM	Risk-Based Decision Making
EDC	1,2-Dichloroethane	RI	Remedial Investigation
EF	Exposure Factor	RI/FS Work Plan	<i>Remedial Investigation/Feasibility Study Work Plan for the Portland Shipyard, Bridgewater, November 2000.</i>
EPA	U.S. Environmental Protection Agency	RME	Reasonable Maximum Exposure
EPC	Exposure Point Concentration	SIUF	Swan Island Upland Facility
Facility	Operable Unit 1 of the SIUF	TCE	Trichloroethene
FFA	Fill, Fine-grained Facies of Flood Deposits, and Recent Alluvium	TPH	Total Petroleum Hydrocarbons
HI	Hazard Index	VOC	Volatile Organic Compound
HQ	Hazard Quotient	90% UCL	90-percent Upper Confidence Limits



1.0 Introduction

This report presents the results of the baseline human health risk assessment (HHRA) for Operable Unit 1 (the Facility or OU1) at the Swan Island Upland Facility (SIUF) in Portland, Oregon (Figure 1). The baseline HHRA was conducted in accordance with the protocol for performing risk assessments under Oregon Administrative Rules (OAR) 340-122-084, Oregon Department of Environmental Quality (DEQ) risk assessment guidance documents (DEQ, 2000 and 2003), and the *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual* (EPA, 1989), as appropriate. Additionally, the scope of the baseline HHRA was defined in the DEQ-approved *Remedial Investigation/Feasibility Study Work Plan for the Portland Shipyard* (RI/FS Work Plan; Bridgewater, 2000), an annotated risk assessment outline (e-mail from the Port of Portland [Port] to DEQ dated October 13, 2008), and DEQ comments on the outline (e-mail from DEQ to Port dated November 5, 2008). All work was conducted under the July 24, 2006 Voluntary Agreement for Remedial Investigation, Source Control Measures, and Feasibility Study (Agreement) between the Port and the DEQ.

The general objective of the baseline HHRA is to identify the quantitative potential risk to human health resulting from chemicals present at OU1.

This baseline HHRA report covers the following major topics:

- Conceptual site model (CSM);
- Human health risk assessment:
 - Exposure assessment;
 - Toxicity assessment;
 - Risk characterization; and
- Uncertainties.

2.0 Conceptual Site Model

The CSM presented in this section was developed from the results of the remedial investigation (RI). Specific details on site history and the RI work are discussed in the *Supplemental Preliminary Assessment* (ACA, 2006), RI/FS Work Plan (Bridgewater, 2000), *Phase II Remedial Investigation Work Plan Addendum* (Bridgewater, 2006), and *Former Substation and Berth 305 Sampling Results Addendum* (ACA, 2007).



2.1 Site Location, Description, and History

The Facility consists of OU1 at the SIUF. The SIUF was previously referred to by DEQ as the Swan Island Portland Shipyard and identified in the DEQ Environmental Cleanup Site Information (ECSI) system as Site 271. Figure 1 shows the location of the SIUF. OU1 consists of the upland property currently owned by Vigor Industrial, LLC, referred to as the Cascade General Ship Repair Yard (CGSRY), and formerly known as the Portland Shipyard (PSY). Figure 2 shows the boundary of OU1. OU1 consists of approximately 57 acres of upland at the CGSRY.

The Port developed Swan Island beginning in 1923 when the main navigation channel of the Willamette River was relocated to the west side of the island. River sediments dredged as part of the project were deposited on Swan Island to raise the surface elevation and construct a causeway connecting the island to the eastern shore of the river. This filling readied the island for development into the first Portland airport. Airport construction was completed and operations started in 1931. The airport operated until 1941, when it was relocated to northeast Portland.

In 1942, the U.S. Maritime Commission entered into an agreement to lease approximately 250 acres of Swan Island from the Port. The Maritime Commission then contracted with Kaiser Company for the construction and operation of a shipbuilding facility on the northwest end of the island, including the area of OU1. Kaiser operated the shipyard until 1945. From 1945 to 1949, the shipyard was sub-leased to various tenants. In 1949, the Port purchased the shipyard assets.

In 1950, the Port developed the Swan Island Ship Repair Yard, later known as the PSY. Through 1995, the Port expanded the PSY capabilities including addition of dry docks; construction of the first ballast water treatment plant (BWTP) in 1973; development of berths along the Willamette River; and construction of a new BWTP in 1979. During the time of the Port's ownership, it offered the facilities for ship repair by tariff, contracted with various companies to provide ship repair services, and leased space to a number of tenants who supported ship repair activities and performed other industrial operations.

In 1996, the Port entered into an operating agreement with Cascade General. While the Port retained ownership of the shipyard, operations were transferred to Cascade General, who took responsibility for contractor/tenant management. The construction of a plant to treat storm water from the dry docks (i.e., water generated from raising the dry docks) was completed in 1997. In 2000, the Port sold the portion of the shipyard that is defined in the Agreement as OU1 to Portland Shipyard (currently a subsidiary of Vigor Industrial, LLC).



2.2 Geology and Hydrogeology

2.2.1 Geology

Regional Geology. The SIUF is located in the Portland Basin, a bowl-like structure bounded by folded and faulted uplands. The basin has been filled with up to 1,400 feet of alluvial and glacio-fluvial flood deposits. These sediments overlie older (Eocene and Miocene) rocks, including the Columbia River Basalt Group, Waverly Heights basalt, and older marine sediments. Regional geologic units present beneath the Facility (from the ground surface downward) include Recent Fill (primarily dredged river sediment); fine-grained Pleistocene Flood Deposits and Recent Alluvium (undifferentiated); coarse-grained Pleistocene Flood Deposits (gravels); Upper Troutdale Formation; Lower Troutdale Formation/Sandy River Mudstone; and Columbia River Basalt Group.

Local Geology. Phase I and II investigations performed at the SIUF characterized geologic conditions to approximately 40 feet below the ground surface (bgs). The subsurface soils beneath the SIUF are mixtures of silt, sandy silt, silty sand, sand, and sand with gravel. In general, sand, and occasional gravel, is encountered to a depth of approximately 20 feet bgs. These materials represent the Willamette River dredged materials that were placed on Swan Island when it was reconfigured and raised in elevation in the 1920s. Underlying the Recent Fill is Recent Alluvium, associated with the original Swan Island, that consists of variable mixtures of silt, sandy silt, silty sand, and sand.

2.2.2 Hydrogeology

Regional Hydrogeology. The major hydrogeologic units found in the area, proceeding from uppermost to lowermost, are Fill, Fine-grained Facies of Flood Deposits, and Recent Alluvium (FFA); Coarse-grained Flood Deposits and Upper Troutdale Formation (CGF); Lower Troutdale Formation/Sandy River Mudstone; and Columbia River Basalt Group. Of these, the FFA and CGF are the two hydrogeologic units that are relevant to the SIUF. The FFA ranges in thickness from 30 to 100 feet. It is the primary unit of importance in defining the interactions between upland groundwater and the river. The distribution of textures, and thus groundwater flow properties of the unit, varies both vertically and horizontally by location. Typical hydraulic conductivities can range over several orders of magnitude depending upon whether the unit contains silt and clay, silty sand, or sand. The CGF has an overall thickness in the range of 100 feet. This unit may act as a preferential groundwater flow pathway to deeper units and for deeper groundwater flow to the river where the unit is present adjacent to the river.

Local Hydrogeology. Shallow groundwater occurs under water table conditions at the SIUF. The depth to groundwater ranges from approximately 18 to 30 feet bgs. Shallow groundwater is recharged by the infiltration of precipitation that falls on Swan Island. Shallow groundwater discharges to the Willamette River and Swan Island Lagoon. Beneath OU1, the groundwater flow direction is radially outward from the middle of Swan Island toward the Willamette River and Swan Island Lagoon.



Groundwater elevations near the Willamette River and Swan Island shorelines fluctuate in response to diurnal tidal cycles and seasonal changes in Willamette River elevations. Groundwater monitoring performed between December 2001 and December 2005 found that groundwater elevations in wells installed near the shoreline fluctuated approximately 8 feet. Farther inland, toward the middle of Swan Island, the response to changes in river elevations is less pronounced with observed fluctuations of less than 1 foot.

Surface Water. There are no surface waters on the Facility. The Willamette River and Swan Island Lagoon border the SIUF on three sides (see Figure 1). Precipitation falling on the Facility is captured by the storm water collection system.

2.3 Nature and Extent of Contamination

Based on historical reviews and investigations conducted at the Facility, the chemicals of interest (COI) in soil and groundwater are petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and metals. All COI data are listed in the tables in Appendix A. Sample location maps are also included in Appendix A. In general, the majority of samples analyzed were below background or detection limits for most COIs. The most frequently detected COIs were PAHs.

2.4 Beneficial Land and Water Use

A land use evaluation and a beneficial water use evaluation were completed as part of the RI (Bridgewater, 2006). Conclusions of the land and water use evaluations are summarized below.

The current and reasonably likely future land use for the SIUF is industrial. The SIUF is currently zoned Industrial and lies within the City of Portland Industrial Sanctuary and Swan Island Plan District. The SIUF is expected to continue to be used for industrial purposes consistent with goals and policies stated in the City of Portland Comprehensive Plan.

The only current and reasonably likely future beneficial groundwater use at the SIUF is discharge to surface water. Other beneficial uses of groundwater on the SIUF are unlikely because a public water supply system already exists and is the source of water supply for all OUs; there is no trend toward groundwater being developed as a source of water supply in the area; the owners of properties that make up the SIUF have indicated that they have no plans for future use of groundwater; and the public water suppliers, including the City of Portland, have no plans to develop groundwater on or near the SIUF to meet future increases in water demand.



The Willamette River is adjacent to the Facility. It is used mainly for habitat (e.g., anadromous and resident fish species), commercial/industrial activities (e.g., navigation), and recreational activities (e.g., boating, sport fishing). Also, local Native American tribes have fishing rights on the lower Willamette River.

2.5 Chemicals of Potential Concern

The RI for the Facility included chemical analysis of up to 166 soil samples and 99 groundwater samples (see Appendix A). These data are of sufficient quality for use in risk assessment. A screening of the chemical data was completed to identify chemicals of potential concern (COPC) in accordance with DEQ risk assessment guidance (DEQ, 2000). In general, the screening process used assumptions about exposure and toxicity that are more conservative than used in the subsequent risk calculations. This approach assures that chemicals that may contribute small but significant portions to overall risk are not left out. Primary conservative approaches used include:

- Residential screening levels for soil;
- Residential tap water screening levels for groundwater;
- Use of diesel screening level for residual petroleum hydrocarbons; and
- Use of chromium VI screening level for total chromium. Based on site history, there is no expectation that chromium VI is present above background concentrations, and soil samples were generally analyzed for total chromium.

The COPC screening is presented in Table 1. All chemicals detected at least once in soil or groundwater are listed in the table. The screening identified the following COPCs:

COPC	Soil	Groundwater	Soil/Groundwater Combined
Diesel-Range Total Petroleum Hydrocarbons (TPH)	X		
Arsenic	X	X	
Chromium	X	X	
Lead	X	X	
Nickel			X
Aroclor 1260	X		
Total PCBs	X		
Naphthalene		X	
Benzo(a)anthracene	X	X	
Benzo(b)fluoranthene	X	X	
Benzo(k)fluoranthene		X	
Benzo(a)pyrene	X	X	
Indeno(1,2,3-cd)pyrene	X	X	
Dibenz(a,h)anthracene	X	X	
Benzo(g,h,i)perylene	X	X	
Tetrachloroethene (PCE)		X	
1,2-Dichloroethane (EDC)		X	
Trichloroethene (TCE)		X	



3.0 Human Health Risk Assessment

This section describes the scope and results of the baseline HHRA for the Facility. The HHRA was conducted in accordance with the RI/FS Work Plan (Bridgewater, 2000) and the annotated risk assessment outline with comments (e-mails dated October 13 and November 5, 2008), and it conforms to the protocol for performing risk assessments under OAR 340-122-084; DEQ's *Guidance for Conduct of Deterministic Human Health Risk Assessments* (DEQ, 2000); and DEQ's guidance, *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, 2003). The HHRA evaluates the magnitude of adverse impacts to human health associated with actual or potential exposure to Facility-related COPCs.

The HHRA quantitatively evaluated the complete exposure pathways for the Facility. In accordance with U.S. Environmental Protection Agency (EPA) and DEQ guidance, the HHRA included: Exposure Assessment, Toxicity Assessment, and Risk Characterization. Section 4 includes an uncertainty analysis for the HHRA.

3.1 Exposure Assessment

The objectives of the exposure assessment are to:

- Identify potentially exposed populations;
- Identify potentially complete exposure pathways; and
- Measure or estimate the magnitude, duration, and frequency of exposure for each receptor (or receptor group).

Figure 3 shows the CSM for the Facility. This CSM provides the framework for assessing potential exposure pathways to be considered in the risk assessment. To be considered complete, an exposure pathway must have: (1) an identified source of COPCs; (2) a release/transport mechanism from the source; and (3) a receptor to whom contact can occur. The following summarizes the analysis of these factors that were used to develop the CSM.

3.1.1 Potentially Exposed Populations

Populations considered for potential exposure included Residents; Occupational, Construction, and Excavation Workers; Recreational Users; and Trespassers. Potential for exposure of these populations was evaluated as follows.

- *Residents* – The Facility is industrial and will likely remain industrial so there is no direct exposure to residents. The beneficial water use analysis indicated that the only current or reasonably likely future uses of groundwater are recharge to the Willamette River. As agreed to with DEQ, migration



of COPCs to surface water will be addressed in the Source Control Evaluation. Therefore, there is no indirect exposure to Residents.

- *Occupational Workers* – Occupational Workers could be exposed to soil now and in the future. The only potential exposure to groundwater is indirect (i.e., volatilization).
- *Construction and Excavation Workers* – Construction and Excavation Workers could be exposed to soil in future construction projects. Given the depth to groundwater (greater than 18 feet), there are no direct exposures of workers to groundwater. Indirect exposure (i.e., volatilization) is possible.
- *Recreational Users* – The Facility is located in an industrial area where access is strictly controlled, so there would be no direct exposure for Recreational Users. Potential exposures to Recreational Users of the river will be addressed in the Source Control Evaluation and Portland Harbor risk assessment.
- *Trespassers* – The Facility is located in an industrial area where access is strictly controlled. Trespassers are not considered to be a potentially exposed population.

In summary, potential receptors quantitatively evaluated in this HHRA are Occupational, Construction, and Excavation Workers.

3.1.2 Potentially Complete Exposure Routes

The following lists possible exposure pathways with discussion of rationale for inclusion or exclusion of each pathway.

- *Direct Contact* – Direct contact with soil containing COPCs is possible for Occupational, Construction, and Excavation Workers. Direct contact may include incidental ingestion, skin contact, or inhalation of vapors and dust. For VOCs, dust inhalation is a minor pathway and will be neglected. Inhalation of volatiles for Occupational Workers is also considered separately.
- *Outdoor Air* – Inhalation of VOCs volatilizing from soil or groundwater is possible for Occupational, Construction, and Excavation Workers. Inhalation for Construction and Excavation Workers is included in the direct contact pathway. This is a current and future potential pathway for Occupational Workers.
- *Indoor Air* – Inhalation of VOCs infiltrating indoors from soil or groundwater is possible for Occupational receptors. This is a current and future potential pathway.
- *Groundwater Use* – Groundwater is not used and is not reasonably likely to be used in the future, so there are no direct groundwater exposures.
- *Surface Water* – Migration to the river will be addressed in the Source Control Evaluation, so no surface water pathways are evaluated in this HHRA.



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- *Leaching to Groundwater* – COPCs in soil could leach to groundwater. However, the only groundwater pathway being evaluated in this HHRA is volatilization. The more direct pathway of volatilization from soil will be evaluated, so there are no complete leaching to groundwater pathways.

Based on the discussion above, the exposure pathways evaluated for receptors in this HHRA are:

- *Direct Contact* – Incidental ingestion of, dermal contact with, and inhalation of vapors from soil (Occupational, Construction, and Excavation Worker).
- *Vapor Intrusion* – Inhalation of VOCs infiltrating indoors from soil or groundwater (Occupational receptors).
- *Outdoor Air* – Inhalation of VOCs from soil or groundwater (Occupational receptors).

3.1.3 Soil and Groundwater Exposure Point Concentrations

Exposure point concentrations (EPCs) representative of chemical concentrations in soil and groundwater were calculated to compare to toxicity criteria. The EPCs for the site COPCs were derived from data obtained from sampling as discussed below. Appendix A presents tables listing the data used for the EPC calculations.

Representative Data Sets. In selecting data sets representative of the potential exposure pathways and receptors, consideration was given to lateral extent, vertical extent, and time period of data collection.

For lateral extent, a receptor exposure area was defined representing the area typically occupied by a potential receptor. For an industrial area, each business is a potential exposure area because it is reasonable to assume that a typical person has only one full-time occupation and therefore one place of business. Therefore, OU1 (i.e., the CGSRY) is one exposure area and data within OU1 were combined to evaluate EPCs. However, OU1 is relatively large (57 acres), so it is possible that receptors could spend most of their time in a smaller area. To assess this potential, maximum detected concentrations of COPCs were used to screen risks to assess if further evaluation is warranted for smaller exposure areas.

For vertical extent, representative data were selected as follows:

- Occupational Workers are typically exposed only to surface soil, so soil data in the depth range of 0 to 3 feet were used to evaluate Occupational exposure.
- Construction and Excavation Workers were assumed to be exposed to soil within the depth range of 0 to 15 feet.



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- For volatilization from soil, data from the unsaturated zone of soil were assumed to be representative (up to 30 feet).
 - For groundwater, data collected from monitoring wells were used to quantitatively evaluate potential risk.

Groundwater data have been collected during the period from 2001 through 2007. These data were assumed to be representative of baseline conditions.

The following summarizes the data sets used in the EPC calculations.

- Soil, Occupational Worker, Direct Contact – Data from soil samples collected within 3 feet of the ground surface.
- Soil, Construction and Excavation Workers, Direct Contact and Inhalation – Data from soil samples collected within 15 feet of the ground surface.
- Soil, Occupational Workers, Vapor Intrusion and Outdoor Air – Data from soil samples collected within 30 feet of the ground surface.
- Groundwater, All Receptors, Vapor Intrusion and Outdoor Air – Data from monitoring wells.

Representative Concentrations. Risks are evaluated based on the Reasonable Maximum Exposure (RME) and the Central Tendency (CT). In accordance with DEQ guidance, the 90-percent upper confidence limits (90% UCL) on the arithmetic mean concentration of COPCs in each environmental medium of concern were used to evaluate the RME scenario, while the arithmetic mean was used to evaluate the CT scenario. For cases with limited frequency of detections, professional judgment was used to select the RME and CT values, as discussed below. The RME scenario is intended to be a conservative estimate of potential exposure, while the CT is intended to be a more realistic exposure scenario. Using both the RME and CT allows for a range of potential risk and hazard estimates.

The 90% UCL was calculated based on EPA guidance (EPA, 2002). In accordance with EPA guidance (EPA, 1989 and 2002) for chemicals detected at one sampling location but not at others, a proxy concentration equal to half the sample method reporting limit was used to represent the concentration of the COPC in a sample where it was not detected. Only COPCs with at least one detection within the data set were included in the quantitative evaluation.

Soil and Groundwater EPCs. Table 2 summarizes the results of the EPC calculations. The methods for calculating EPCs in soil and groundwater were as follows:



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- A data set was created for each COPC and for each medium, receptor, and pathway discussed above. Where duplicate sample data were collected, the higher of the duplicate or original sample result was used in the data set.
 - For each data set, EPA's ProUCL (EPA, 2007) was used to obtain data distribution evaluations and estimates for various statistical results including the mean and 90% UCL. Input and output from the ProUCL calculations are presented in Appendix B. In accordance with ProUCL guidance, the 90% UCL for these data sets were selected as follows:
 - Five soil data sets were normally distributed. For each of these data sets, the 90-percent Student-t value was used for the UCL.
 - Four soil data sets were lognormally distributed. For these data sets, the 90-percent H or 90-percent Modified-t value was used for the UCL, as dictated by the guidance.
 - None of the data sets exhibited a gamma distribution.
 - All remaining data sets had non-parametric data distributions. For these data sets, the 95-percent, 97.5-percent, or 99-percent Chebyshev value, or the 90-percent Modified-t value, was used as the UCL, as dictated by the guidance.
 - The ProUCL output included the mean value. Some data sets had infrequent, low detections of the chemical such that some detection limits exceeded the maximum detected concentration. For these data sets, the calculated mean value in some cases exceeded the maximum concentration detected.
 - The CT and RME values were selected as follows:
 - CT – The lower of the calculated mean value or maximum detected concentration was used.
 - RME – The lower of the calculated 90% UCL or maximum detected concentration was used.

3.1.4 Exposure Parameters

Exposure parameters consist of characteristics of the exposed populations (e.g., body weight, lifetime, ingestion rates, breathing rates, etc.), characteristics of the chemicals (e.g., volatility, water/soil partitioning), or characteristics of the site conditions (e.g., depth to groundwater). The exposure parameters are combined to convert the EPCs determined in Section 3.1.3 to doses experienced by the receptors. This HHRA uses DEQ default exposure parameters for the purpose of calculating baseline risk.

3.2 Toxicity Assessment

The objectives of the toxicity assessment are to evaluate the inherent toxicity of the COPCs and to identify and select toxicological measures for use in quantifying the significance of the exposure. The toxicity values



are then combined with the EPCs and exposure factors as described in Section 3.3 to estimate site hazards and risks. The use of default parameters allows for the toxicity assessment and HHRA process to be streamlined as described in Section 3.3. This HHRA uses default toxicity parameters embodied in risk-based concentrations (RBCs). The RBCs used are from DEQ's risk-based decision making (RBDM) guidance (DEQ, 2003; RBC Spreadsheet updated October 3, 2008). Where default RBCs were unavailable, EPA Regional Screening Levels were used (EPA, 2008). If neither were available, conservative surrogate RBCs were selected for use. Table 3 lists the RBCs for each of the pathways and receptors discussed in Section 3.1.

3.3 Risk Characterization

Risk characterization is the process of comparing the chemical intake by a receptor to the toxicity of the chemical. This comparison is expressed either as a hazard index (non-carcinogens) or an excess lifetime risk of cancer (carcinogens). Potential hazards and risks were calculated using the RBC Method as described below.

3.3.1 Non-Carcinogenic Effects

For each non-carcinogen, the hazard quotient (HQ) is computed as follows:

$$[1] \quad HQ = D/RfD$$

where:

D = Dose of chemical experienced by the receptor

RfD = Reference dose

and:

$$[2] \quad D = EPC \times EF$$

$$[3] \quad RBC = RfD \times HQ^*/EF$$

where:

EPC = Exposure point concentration (see Section 3.1); listed in Table 2

EF = Exposure factors for non-carcinogens combined in accordance with DEQ and EPA guidance (default factors used for this HHRA)

RBC = Risk-based concentration determined in accordance with DEQ guidance (DEQ, 2003) and listed in Table 3

HQ* = Acceptable hazard quotient, 1.0



Substitute for dose in equation [1] using equation [2]. Solve equation [3] for RfD, and substitute the result in equation [1]. The result is equation [4]:

$$[4] \quad HQ = (EPC \times HQ^*)/RBC$$

For all receptors and all pathways, $HQ^* = 1.0$. For simultaneous exposure to multiple chemicals with similar toxic effects or target organ, a Hazard Index (HI) is calculated as the sum of chemical-specific HQs. Potential non-carcinogenic risks are considered to be acceptable if the HI or HQ is less than 1.0.

Table 4 presents the results of the non-carcinogenic hazard estimates. For receptors and pathways evaluated, the HQs and HIs are all less than 1, indicating that non-carcinogenic hazards are acceptable.

Because OU1 is a relatively large area, it is possible that a receptor may spend the majority of the time in a smaller area. To assess if risks for smaller areas should be evaluated further, screening-level hazard estimates were computed using the maximum detected concentrations of COPCs. Table 5 presents the results of the non-carcinogenic hazard screening using maximum detected concentrations of COPCs. For receptors and pathways evaluated, the screening-level HQs and HIs are equal to or less than 1, indicating that non-carcinogenic hazards are acceptable.

3.3.2 Carcinogenic Effects

For each carcinogen, the excess lifetime cancer risk estimate is computed as follows:

$$[5] \quad \text{Risk} = D \times SF$$

where:

D = Dose of chemical experienced by the receptor

SF = Carcinogenic slope factor

and:

$$[6] \quad D = EPC \times EF$$

$$[7] \quad RBC = \text{Risk}^*/(EF \times SF)$$

where:

EPC = Exposure point concentration (see Section 3.1); listed in Table 2

EF = Exposure factors for carcinogens combined in accordance with DEQ and EPA guidance (default factors used for this HHRA)

RBC = Risk-based concentration determined in accordance with DEQ guidance (DEQ, 2003) and listed in Table 3



Risk* = Acceptable excess lifetime cancer risk for individual chemicals (in accordance with OAR 340-122-115, 1×10^{-6})

Substitute for dose in equation [5] using equation [6]. Solve equation [7] for SF, and substitute the result in equation [5]. The result is equation [8]:

$$[8] \quad \text{Risk} = (\text{EPC} \times \text{Risk}^*)/\text{RBC}$$

For simultaneous exposure to multiple chemicals, individual excess risk estimates are summed to provide pathway, media, and receptor total excess risk estimates. Combining potential cancer risks as a result of exposure to multiple chemicals through multiple exposure pathways assumes that each COPC exerts its effect independently (i.e., there is no synergism or antagonism).

OAR 340-122-115 considers 1×10^{-5} to be the acceptable risk level for combined risk from multiple carcinogens and/or multiple pathways.

Table 6 presents the results of the carcinogenic excess lifetime risk estimates. For receptors and pathways evaluated, the excess lifetime cancer risks are less than the acceptable risk level (and therefore acceptable) except for Occupational direct contact with soil containing arsenic. However, the EPC for arsenic is below the background concentration (5.8 milligrams per kilogram [mg/kg]; Ecology, 1994) for arsenic, so the risk is acceptable.

Similar to non-carcinogens, risks for smaller areas were assessed based on screening-level risks computed using maximum detected concentrations of COPCs. Table 7 presents the results of the carcinogenic screening-level risk estimates using maximum detected concentrations of COPCs. For all receptors and pathways, the screening-level excess lifetime cancer risks are equal to or less than the acceptable risk levels, except as discussed below.

- Occupational Exposure to Arsenic in Soil – The maximum detected concentration of arsenic is below the background concentration of arsenic, so this pathway is acceptable.
- Occupational Exposure to PCBs in Soil – The maximum detected concentration of PCBs was in shallow soil at the BWTP. The 90% UCL for Aroclor 1260 and total PCBs for shallow soil from only the BWTP area were computed to be 0.67 and 0.73 mg/kg, respectively, corresponding to a computed risk level of 7×10^{-7} , less than the acceptable risk level.
- Occupational Vapor Intrusion Exposure to TCE in Groundwater – TCE was detected consistently only in MW-4. The maximum detected concentration of TCE was in a sample collected from MW-4 nearly seven years ago. The overall trend in TCE concentration in that well is downward. The 90% UCL for TCE data from only MW-4 was computed to be 130 micrograms per liter ($\mu\text{g}/\text{L}$), corresponding to a computed risk level of 1×10^{-6} , equal to the acceptable risk level. Since 2006,



the maximum detected concentration of TCE was 5.1 µg/L, corresponding to a computed risk level of 5×10^{-8} .

Based on the above screening-level analysis, excess lifetime cancer risks for smaller areas within OU1 are within the acceptable risk levels.

3.4 Hot Spot Evaluation

The RI shall identify Hot Spots in media other than water (OAR 340-122-0080(7)). A Hot Spot may be present in media other than water only if hazardous substances are present at unacceptable risk levels (OAR 340-122-0115(32)(b)). As indicated in Section 3.3, all risk levels are acceptable so no Hot Spots are present.

4.0 Uncertainty Evaluation

This section identifies assumptions and uncertainties inherent in the risk assessment in order to place the risk estimates in proper perspective. In general, the risk assessment was conducted in a manner such that the net result of assumptions made to address uncertainties was more likely to overestimate risk. For this risk assessment, the general sources of uncertainty addressed include:

- Data collection and evaluation;
- Exposure assessment;
- Toxicity assessment; and
- Risk characterization.

4.1 Data Collection and Evaluation

The identification of the types and numbers of environmental samples, sampling procedures, and sample analyses each contain components that contribute to uncertainties in this risk assessment. For example, it is generally not practical to sample all locations and media at a site. Decisions were made to select a subset of the potential sampling locations and media based upon the anticipated presence of the chemical. These decisions were made with the use of historical and background information on the Facility and the potential contaminants' chemical and physical properties. Exposure doses for the Facility that are based on non-random—or source area—samples may be overestimated.



4.2 Exposure Assessment

The exposure estimation methods are subject to varying degrees of uncertainty. The degree of uncertainty generally depends on the amount of Facility-specific data available. The following sources of uncertainty have been identified:

- **Exposure Scenario Identification.** This HHRA assumes that receptors are limited to Occupational, Construction, and Excavation Workers. If these assumptions are incorrect, future risks and hazards could be under- or overestimated.
- **Exposure Parameters and Assumptions.** The exposure assumptions may or may not be representative of the actual exposure conditions and could under- or overestimate future risks and hazards.
- **Assumption of Steady-State Conditions.** The inherent assumption is that future COPC concentrations are the same as current concentrations. This assumption is conservative. Organic COPCs are subject to degradation, and groundwater monitoring is showing downward trends for organic chemicals. Therefore, current concentrations (that use data collected from as long ago as seven years) and future concentrations are and will be lower, and this assumption results in an overestimate of potential risk.

4.3 Toxicity Assessment

Toxicity Factors. Uncertainty is present in the derivation of the toxicity factors used to derive the RBCs used in this HHRA. Toxicity factors are derived primarily from animal studies. These necessarily require extrapolation to humans, extrapolation from high-dose to low-dose situations, and extrapolation from one exposure pathway to another (e.g., oral to dermal). In addition, the studies have difficulty accounting for population variability, and the quality of studies varies among chemicals. All of these factors may result in either an over- or underestimation of risk. These uncertainties are typically addressed with the use of uncertainty factors such that reference doses for non-carcinogens and slope factors for carcinogens result in upper-bound estimates of risk.

The use of surrogate RBCs for receptors lacking RBCs may under- or overestimate the potential risks or hazards.

Uncertainty associated with determining chemical carcinogenicity is reflected in the weight-of-evidence classification groups assigned to carcinogens. In addition, uncertainties are introduced because slope factors are derived from the low-dose end of the dose-response curves, and the experimental studies are usually conducted at the high-dose end of the curve. The selected 95% UCL of the slope of the dose-response curve is considered an upper-bound toxicity value. Therefore, it is unlikely that the slope factors



will underestimate risk. Actual cancer risk may range from a low of zero to the upper limit defined by the model.

Uncertainty is also associated with using oral toxicity factors to evaluate dermal exposures. The use of oral toxicity factors as surrogates is necessary because there are no dermal toxicity factors approved by EPA. Most of the uncertainty exists because it is not known whether the compounds in question exhibit the same toxicity via dermal contact as they do via the oral pathway. Default oral absorption factors were used to adjust the oral toxicity factors so the absorbed doses calculated for the dermal pathway could be evaluated. The use of the oral absorption factors may bias the risk and hazard estimates high or low.

4.4 Risk Characterization

This HHRA used EPA/DEQ standard algorithms to calculate health risks and hazards. There are certain assumptions inherent in the use of these equations that add uncertainty. For example, calculations of carcinogenic risks and non-carcinogenic HI assume that the toxic effects are additive. This assumption adds uncertainty to the assessment and may result in an overestimation or underestimation of the potential risks, depending on whether antagonistic or synergistic conditions apply. Exposure pathway risks are combined assuming that a single receptor may be exposed to contamination through a selected number of pathways concurrently. This is a conservative estimate that may overestimate risks and hazards. Additionally, the standard algorithms used do not consider certain factors, such as absorption or matrix effects. In cases where these processes are important, the risk estimates may overestimate or underestimate the potential human risks at this site.

5.0 Summary and Conclusions

The HHRA for the Facility was completed in accordance with the RI/FS Work Plan and annotated risk assessment outline reviewed and approved by the DEQ, and relevant guidance. Under the baseline conditions, the results of the HHRA are summarized as follows:

- For non-carcinogens, hazards for receptors and pathways evaluated met the acceptable hazard level of 1. Estimated hazard levels ranged from 0.0001 to 0.02 for the CT estimates and from 0.0001 to 0.1 for the RME estimates.
- For carcinogens, receptors and pathways evaluated had excess lifetime cancer risks that met the acceptable risk levels (exposure to arsenic was above the acceptable risk level, but arsenic was detected at background concentrations). For chemicals detected above background concentrations, estimated excess lifetime cancer risks are summarized as follows:



-
- For individual chemicals, the acceptable risk level is 1×10^{-6} . The estimated excess lifetime cancer risks ranged from 6×10^{-13} to 2×10^{-7} for the CT estimates and from 1×10^{-12} to 8×10^{-7} for the RME estimates.
 - For multiple chemicals, the acceptable risk level is 1×10^{-5} . The estimated excess lifetime cancer risks ranged from 1×10^{-10} to 2×10^{-6} for the CT estimates and from 3×10^{-10} to 3×10^{-6} for the RME estimates.

Because hazards and risks are acceptable, no further action is required for the RI/FS for OU1 at the SIUF.



6.0 References

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**Table 1 - Chemicals of Potential Concern
Swan Island Upland Facility**

Chemicals of Interest	Soil (see units below)												Groundwater ($\mu\text{g/L}$)												Chemicals of Potential Concern ⁴		
	Detection Frequency			Detection Limit Range			COPC Screening						Detection Frequency			Detection Limit Range			COPC Screening								
	Det.	Total	%	Min.	Max.	SL	Cij	Rij	COPC?	Rij/Rij	COPC?	Det.	Total	%	Min.	Max.	SL	Cij	Rij	COPC?	Rij/Rij	COPC?	SRij	COPC?			
Total Petroleum Hydrocarbons				mg/kg																							
Gasoline-Range Organics	1	/	143	1%	20	100	7.2E+02	7.6E+00	1.1E-02	No	1.1E-04	No	--	/	--	--	--	--	--	--	--	--	--	--	--	--	
Diesel-Range Organics	30	/	160	19%	25	140	3.9E+03	1.5E+04	3.8E+00	Yes	4.0E-02	Yes	--	/	--	--	--	--	--	--	--	--	--	--	--	Diesel-Range Organics	
Residual-Range Organics	34	/	166	20%	100	270	3.9E+03	2.1E+03	5.4E-01	No	5.6E-03	No	--	/	--	--	--	--	--	--	--	--	--	--	--		
TPH-418.1	7	/	18	39%	100	100	3.9E+03	1.0E+03	2.6E-01	No	2.8E-03	No	--	/	--	--	--	--	--	--	--	--	--	--	--		
Total Metals				mg/kg																							
Antimony	5	/	71	7%	10.2	12.5	31	2.1E+01	6.8E-01	No	7.1E-03	No	18	/	99	18%	0.04	0.25	1.5E+01	1.2E+00	7.9E-02	No	7.2E-06	No	7.6E-01	No	
Arsenic ⁵	83	/	89	93%	1.1	2.9	5.8	1.6E+01	4.1E+01	Yes	4.3E-01	Yes	89	/	99	90%	0.5	2.5	6.6E-02	6.1E+01	9.3E+02	Yes	8.4E-02	Yes	9.7E+02	Yes	
Cadmium	4	/	89	4%	0.5	1.2	1500	1.5E+00	1.0E-03	No	1.0E-05	No	56	/	99	57%	0.02	0.25	1.8E+01	4.2E+00	2.3E-01	No	2.1E-05	No	2.3E-01	No	
Chromium (total)	89	/	89	100%	--	--	280	3.1E+02	1.1E+00	Yes	1.2E-02	No	97	/	99	98%	0.2	0.2	1.1E+02	1.0E+03	9.4E+00	Yes	8.4E-04	No	1.0E+01	Yes	
Copper	71	/	71	100%	--	--	2900	1.3E+02	4.4E-02	No	4.6E-04	No	99	/	99	100%	--	--	1.4E+03	1.2E+03	8.6E-01	No	7.7E-05	No	9.0E-01	No	
Lead	80	/	89	90%	5.0	5.0	400	8.7E+02	2.2E+00	Yes	2.3E-02	No	96	/	99	97%	0.02	0.02	1.5E+01	6.8E+02	4.5E+01	Yes	4.1E-03	No	4.8E+01	Yes	
Mercury	51	/	89	57%	0.02	0.10	23	4.7E+00	2.0E-01	No	2.1E-03	No	21	/	99	21%	0.02	0.2	1.1E+01	4.8E+00	4.4E-01	No	4.0E-05	No	6.4E-01	No	
Nickel	71	/	71	100%	--	--	1600	9.1E+01	5.7E-02	No	6.0E-04	No	99	/	99	100%	--	--	7.3E+02	7.2E+02	9.9E-01	No	8.9E-05	No	1.0E+00	Yes	
Silver	3	/	89	3%	0.5	2.5	390	4.0E+02	1.0E-04	No	1.1E-06	No	47	/	99	47%	0.004	0.1	1.8E+02	3.4E+00	1.9E-02	No	1.7E-06	No	1.9E-02	No	
Zinc	71	/	71	100%	--	--	23000	9.5E+02	4.1E-02	No	4.3E-04	No	99	/	99	100%	--	--	1.1E+04	6.4E+03	5.8E-01	No	5.3E-05	No	6.2E-01	No	
Barium	18	/	18	100%	--	--	16000	2.5E+02	1.6E-02	No	1.7E-04	No	--	/	--	--	--	--	--	--	--	--	--	--	--		
Selenium	3	/	18	17%	0.5	0.5	390	7.8E-01	2.0E-03	No	2.1E-05	No	--	/	--	--	--	--	--	--	--	--	--	--	--		
Dissolved Metals				mg/kg																							
Antimony	--	/	--	--	--	--	--	--	--	--	--	--	16	/	16	100%	--	--	1.5E+01	7.6E-01	5.2E-02	No	4.7E-06	No	--	--	
Arsenic	--	/	--	--	--	--	--	--	--	--	--	--	14	/	16	88%	0.5	0.5	6.6E-02	1.9E+01	2.8E+02	Yes	2.6E-02	Yes	--	--	
Cadmium	--	/	--	--	--	--	--	--	--	--	--	--	3	/	16	19%	0.05	0.05	1.8E+01	6.0E-02	3.3E-03	No	3.0E-07	No	--	--	
Chromium	--	/	--	--	--	--	--	--	--	--	--	--	16	/	16	100%	--	--	1.1E+02	4.2E+00	3.8E-02	No	3.5E-06	No	--	--	
Copper	--	/	--	--	--	--	--	--	--	--	--	--	16	/	16	100%	--	--	1.4E+03	5.1E+00	3.6E-03	No	3.3E-07	No	--	--	
Lead	--	/	--	--	--	--	--	--	--	--	--	--	5	/	16	31%	0.02	0.02	1.5E+01	8.7E-01	5.8E-02	No	2.1E-06	No	--	--	
Nickel	--	/	--	--	--	--	--	--	--	--	--	--	16	/	16	100%	--	--	7.3E+02	1.7E+01	2.4E+02	No	2.1E-06	No	--	--	
Silver	--	/	--	--	--	--	--	--	--	--	--	--	1	/	16	6%	0.02	0.02	1.8E+02	4.0E+00	2.2E+04	No	2.0E-08	No	--	--	
Zinc	--	/	--	--	--	--	--	--	--	--	--	--	12	/	16	75%	0.5	0.5	1.1E+04	2.1E+01	2.0E-03	No	1.8E-07	No	--	--	
PCBs				µg/kg																							
Aroclor 1254	18	/	139	13%	0	100	2.2E+02	2.2E+02	1.0E+00	No	1.0E-02	No	--	/	--	--	--	--	--	--	--	--	--	--	--		
Aroclor 1260	41	/	139	29%	0	50	2.2E+02	1.6E+03	7.3E+00	Yes	7.6E-02	Yes	--	/	--	--	--	--	--	--	--	--	--	--	Aroclor 1260		
Total PCBs	41	/	139	29%	0	100	2.2E+02	1.7E+03	7.5E+00	Yes	7.8E-02	Yes	--	/	--	--	--	--	--	--	--	--	--	--	Total PCBs		
PAHs				µg/kg																							
Naphthalene	18	/	51	35%	5.30	8	3.8E+03	1.5E+02	3.9E-02	No	4.1E-04	No	46	/	87	53%	0.019	0.021	1.2E-01	3.3E-01	2.8E+00	Yes	2.5E-04	No	2.8E+00	Yes	
2-Methylnaphthalene	17	/	51	33%	5.30	8	3.1E+05	1.7E+03	5.5E-03	No	5.7E-05	No	17	/	87	20%	0.019	0.022	1.5E+02	1.1E-01	7.3E-04	No	6.6E-08	No	6.2E-03	No	
Acenaphthylene ⁶	13	/	51	25%	5.00	56	3.1E+05	9.2E+01	3.0E-04	No	3.1E-06	No	9	/	87	10%	0.019	0.020	1.5E+02	1.5E-01	1.0E-03	No	9.0E-08	No	1.3E-03	No	
Acenaphthene	16	/	51	31%	5.00	8	2.9E+06	1.3E+02	4.5E-05	No	4.7E-07	No	15	/	87	17%	0.019	0.021	3.7E+02	1.2E+00	3.2E-03	No	2.9E-07	No	3.3E-03	No	
Dibenzofuran ⁷	16	/	51	31%	5.00	8	3.1E+05	3.9E+02	1.3E-03	No	1.3E-05	No	12	/	87	14%	0.019	0.022	1.5E+02	4.5E-02	3.0E-04	No	2.7E-08	No	1.6E-03	No	
Fluorene	17	/	51	33%	5.00	8	2.6E+06	1.1E+03	4.2E-04	No	4.4E-06	No	10	/	87	11%	0.019	0.022	2.4E+02	7.2E-02	3.0E-04	No	2.7E-08	No	7.2E-04	No	
Phenanthrene ¹	29	/	51	57%	5.40	7	3.1E+05	2.5E+03	8.1E-03	No	8.4E-05	No	43	/	87	49%	0.019	0.021	1.5E+02	1.5E+00	1.0E-02	No	9.0E-07	No	1.8E-02	No	
Anthracene	16	/	51	31%	5.30	56	2.1E+07	1.5E+03	7.1E-05	No	7.5E-07	No	19	/	87	22%	0.019	0.021	1.8E+03	3.8E-01	2.1E-04	No	1.9E-08	No	2.8E-04	No	
Fluoranthene	29	/	51	57%	5.30	56	2.3E+06	5.1E+02	2.2E-04	No	2.3E-06	No	29	/	87	33%	0.019	0.021	1.5E+03	2.3E+00	1.5E-03	No	1.4E-07	No	1.8E-03	No	
Pyrene	34	/	51	67%	5.40	7	1.7E+06	8.9E+02	5.2E-04	No	5.5E-06	No	42	/	87	48%	0.019	0.021	1.1E+03	3.1E+00	2.8E-03	No	2.5E-07	No	3.3E-03	No	
Benz(a)anthracene	29	/	51	57%	5.40	17	1.5E+02	3.1E+02	2.1E+00	Yes	2.2E-02	No	16	/	87	18%	0.019	0.024	2.9E-02	8.2E-01	2.8E+01	Yes	2.5E-03	No	3.0E+01	Yes	
Chrysene	33	/	51	65%	5.40	33	1.5E+04	3.8E+02	2.5E-02	No	2.6E-04	No	21	/	87	24%	0.019	0.021	2.9E+00	9.1E-01	3.1E-01	No	2.8E-05	No	3.4E-01	No	
Benz(b)fluoranthene	25	/	51	49%	5.30	24	1.5E+02	3.2E+02	2.1E+00	Yes	2.2E-02	No	16	/	87	18%	0.019	0.024	2.9E-02	5.5E-01	1.9E+01	Yes	1.7E-03	No	2.1E+01	Yes	
Benz(k)fluoranthene	26	/	51	51%	5.30	56	1.5E+03	2.8E+02	1.9E-01	No	1.9E-03	No	16	/	87	18%	0.019	0.024	2.9E-01	6.0E-01	2.1E+00	Yes	1.9E-04	No	2.3E+00	Yes	
Benz(a)pyrene	30	/	51	59%	5.40	56	1.5E+01	2.7E+02	1.8E+01	Yes	1.9E-01	Yes	17	/	87	20%	0.019	0.021	2.9E-03	8.5E-01	2.9E-02	Yes	2.6E-02	Yes	3.1E-02	Yes	
Indeno(1, 2, 3-cd)pyrene	28	/	51	55%	5.30	56	1.5E+02	2.9E+02	1.9E+00	Yes	2.0E-02	No	17	/	87	20%	0.019	0.021	2.9E-02	7.7E-01	2.7E+01	Yes	2.4E-03	No	2.8E+01	Yes	
Dibenz(a,h)anthracene	18	/	51	35%	5.30	56	1.5E+01	5.4E+01	3.6E+00	Yes	3.8E-02	Yes	6	/	87	7%	0.019	0.024	2.9E-03	1.0E-01	3.4E+01	Yes	3.1E-03	No	3.8E+01	Yes	
Benz(g, h, i)perylene ²	29	/	51	57%	5.40	24	1.5E+02	3.0E+02	2.0E+00	Yes	2.1E-02	No	18	/	87	21%	0										

Acronyms:

SL = Screening Level

Soil: Lower of DEQ RBC for Residential Direct Contact or Occupational Vapor Intrusion (October 2008). If RBC not available, EPA Regional Screening Levels (September 2008).

Except: for naturally occurring metals, screening level is not less than background as defined by Washington Department of Ecology for Clark County.

Groundwater: DEQ RBC for Residential Tapwater (October 2008). If RBC not available, EPA Regional Screening Levels (September 2008).

-- Not Applicable.

COPC = Chemicals of Potential Concern.

McGraw-Hill

$$C_{ij} = \text{Maxim}$$

R_{ij} = Risk ratio for compound i in medium j (C_{ij}/SL); compound is a C₁

$R_j = \text{Sum of risk ratios for medium } j.$

Nij = Number of compounds i detected in

R_{ij}/R_j = Compound is a COPC if this ratio is greater than $1/N_i$

SR_{ij} = Summary risk ratio for compound i in all media (total R_{ij} across

Note

- SL for 2-methylnaphthalene used as surrogate SL.
SL for indeno[1, 2, 3-c]pyrene used as surrogate SL.
SL for tributyltin oxide used as surrogate SL.

Chemicals with frequency of detection of less than five percent were not retained as COPC per DEQ guidance (DEQ 2000: Section 2.3.2[1]).

SL for arsenic is background. However, because detected concentration exceeds SL, Rij calculated from risk-based concentration of 0.39 mg/kg.

Table 2 - Summary of Exposure Point Concentrations (EPCs)
Swan Island Upland Facility - OU1

Medium	Location	Chemical	Data Distribution				Concentration			
			Statistical Assessment			Mean	Maximum	90% UCL	EPC	
			Normal	Lognormal	Gamma				CT	RME
Soil in mg/kg	0 to 3 Ft. All	Diesel-Range Organics	90% Student-t 90% Student-t 90% Student-t 90% H	95% Cheb 99% Cheb 97.5% Cheb 97.5% Cheb 95% Cheb 99% Cheb 95% Cheb 95% Cheb	37	330	54	37	54	
		Arsenic			2.7	5.7	2.9	2.7	2.9	
		Chromium			20	35	22	20	22	
		Lead			19	265	89	19	89	
		Nickel			22	31	23	22	23	
		Aroclor 1260			0.048	1.6	0.15	0.048	0.15	
		Total PCBs			0.059	1.7	0.17	0.059	0.17	
		Naphthalene			0.0064	0.054	0.014	0.0064	0.014	
		Benz(a)anthracene			0.021	0.22	0.096	0.021	0.10	
		Benz(b)fluoranthene			0.025	0.32	0.13	0.025	0.13	
		Benz(k)fluoranthene			0.021	0.28	0.11	0.021	0.11	
		Benz(a)pyrene			0.024	0.27	0.11	0.024	0.11	
		Indeno(1, 2, 3-cd)pyrene			0.022	0.25	0.10	0.022	0.10	
		Dibenzo(a,h)anthracene			0.0076	0.054	0.017	0.0076	0.017	
		Benz(g, h, i)perylene			0.023	0.23	0.029	0.023	0.029	
		Tetrachloroethene (PCE)			Not Detected					
		1,2-Dichloroethane (EDC)			Not Detected					
		Trichloroethene (TCE)			Not Detected					
Soil in mg/kg	0 to 15 Ft. All	Diesel-Range Organics	90% Student-t 90% Student-t 90% Student-t 90% H	97.5% Cheb 97.5% Cheb 97.5% Cheb 97.5% Cheb 95% Cheb 99% Cheb	156	15,000	898	156	898	
		Arsenic			2.6	5.7	2.8	2.6	2.8	
		Chromium			20	61	22	20	22	
		Lead			17	265	54	17	54	
		Nickel			22	31	22	22	22	
		Aroclor 1260			0.049	1.6	0.15	0.049	0.15	
		Total PCBs			0.067	1.65	0.17	0.067	0.17	
		Naphthalene			0.0087	0.099	0.021	0.0087	0.021	
		Benz(a)anthracene			0.021	0.22	0.092	0.021	0.092	
		Benz(b)fluoranthene			0.025	0.32	0.12	0.025	0.12	
		Benz(k)fluoranthene			0.022	0.28	0.10	0.022	0.10	
		Benz(a)pyrene			0.0239	0.27	0.10	0.024	0.10	
		Indeno(1, 2, 3-cd)pyrene			0.022	0.25	0.092	0.022	0.092	
		Dibenzo(a,h)anthracene			0.0080	0.054	0.017	0.0080	0.017	
		Benz(g, h, i)perylene			0.022	0.23	0.087	0.022	0.087	
		Tetrachloroethene (PCE)			Not Detected					
		1,2-Dichloroethane (EDC)			Not Detected					
		Trichloroethene (TCE)			Not Detected					
Soil in mg/kg	0 to 30 Ft. All	Diesel-Range Organics	90% H 90% Modified-t	95% Cheb 90% Modified-t 97.5% Cheb 97.5% Cheb 97.5% Cheb 97.5% Cheb 97.5% Cheb 97.5% Cheb 97.5% Cheb 97.5% Cheb	133	15,000	543	133	543	
		Arsenic			2.9	16	3.1	2.9	3.1	
		Chromium			26	311	26	26	26	
		Lead			28.3	871	102	28	102	
		Nickel			24	91	26	24	26	
		Aroclor 1260			0.046	1.6	0.13	0.046	0.13	
		Total PCBs			0.056	1.65	0.15	0.056	0.15	
		Naphthalene			0.011	0.15	0.026	0.011	0.026	
		Benz(a)anthracene			0.025	0.31	0.075	0.025	0.075	
		Benz(b)fluoranthene			0.026	0.32	0.079	0.026	0.079	
		Benz(k)fluoranthene			0.023	0.28	0.067	0.023	0.067	
		Benz(a)pyrene			0.025	0.27	0.072	0.025	0.072	
		Indeno(1, 2, 3-cd)pyrene			0.024	0.29	0.072	0.024	0.072	
		Dibenzo(a,h)anthracene			0.0080	0.054	0.016	0.0080	0.016	
		Benz(g, h, i)perylene			0.024	0.3	0.071	0.024	0.071	
		Tetrachloroethene (PCE)			Not Detected					
		1,2-Dichloroethane (EDC)			Not Detected					
		Trichloroethene (TCE)			Not Detected					
Groundwater in µg/L	All Wells	Naphthalene		95% Cheb	0.027	0.33	0.055	0.027	0.055	
		Tetrachloroethene (PCE)		90% Modified-t	0.26	0.78	0.28	0.26	0.28	
		1,2-Dichloroethane (EDC)		95% Cheb	0.66	6.3	1.5	0.66	1.5	
		Trichloroethene (TCE)		99% Cheb	19	270	91	19	91	

Notes:

- 1) See Appendix A for list of data used.
- 2) See Appendix B for statistical calculations.
- 3) PCB = Polychlorinated biphenyl.
- 4) UCL = Upper Confidence Limit of the Mean.
- 5) CT = Central Tendency.
- 6) RME = Reasonable Maximum Exposure.
- 7) mg/kg = Milligrams per kilogram.
- 8) µg/L = Micrograms per liter.

Table 3 - Summary of Human Health Risk-Based Concentrations (RBCs)
Swan Island Upland Facility - OU1

	General Endpoint Effects	Risk-Based Concentrations ¹				
		Occupational - Direct Contact	Occupational - Vapor Intrusion	Occupational - Outdoor Air	Construction Worker - Direct Contact and Inhalation	Excavation Worker - Direct Contact and Inhalation
Soil in mg/kg						
Diesel-Range Organics	Non-carcinogen	70,000	nv	nv	23,000	130,000
Arsenic	Carcinogen	1.7	nv	nv	13	370
Chromium ²	Carcinogen	1,300	nv	nv	6,400	180,000
Lead	Non-carcinogen	800	nv	nv	800	800
Nickel	Non-carcinogen	20,000	nv	nv	6,200	170,000
Aroclor 1260 ⁴	Carcinogen	0.98	nv	nv	4.4	120
Total PCBs	Carcinogen	0.98	nv	nv	4.4	120
Naphthalene	Carcinogen	22	93	26	540	15,000
Benzo(a)anthracene	Carcinogen	2.7	nv	nv	21	590
Benzo(b)fluoranthene	Carcinogen	2.7	nv	nv	21	590
Benzo(k)fluoranthene	Carcinogen	27	nv	nv	210	5,900
Benzo(a)pyrene	Carcinogen	0.27	nv	nv	2.1	59
Indeno(1, 2, 3-cd)pyrene	Carcinogen	2.7	nv	nv	21	590
Dibenz(a,h)anthracene	Carcinogen	0.27	nv	nv	2.1	59
Benzo(g, h, i)perylene ³	--	27	nv	nv	210	5,900
Groundwater in µg/L						
Diesel-Range Organics	Non-carcinogen	--	nv	nv	--	--
Arsenic	Carcinogen	--	nv	nv	--	--
Chromium ²	Carcinogen	--	nv	nv	--	--
Lead	Non-carcinogen	--	nv	nv	--	--
Nickel	Non-carcinogen	--	nv	nv	--	--
Aroclor 1260 ⁴	Carcinogen	--	nv	nv	--	--
Total PCBs	Carcinogen	--	nv	nv	--	--
Naphthalene	Carcinogen	--	9,600	15,000	--	--
Benzo(a)anthracene	Carcinogen	--	nv	nv	--	--
Benzo(b)fluoranthene	Carcinogen	--	nv	nv	--	--
Benzo(k)fluoranthene	Carcinogen	--	nv	nv	--	--
Benzo(a)pyrene	Carcinogen	--	nv	nv	--	--
Indeno(1, 2, 3-cd)pyrene	Carcinogen	--	nv	nv	--	--
Dibenz(a,h)anthracene	Carcinogen	--	nv	nv	--	--
Benzo(g, h, i)perylene ³	--	--	nv	nv	--	--
Tetrachloroethene	Carcinogen	--	1,300	8,600	--	--
1,2-Dichloroethane (EDC)	Carcinogen	--	3,600	9,000	--	--
Trichloroethene (TCE)	Carcinogen	--	110	650	--	--

Notes:

1) Risk-Based Decision Making (RBDM) Guidance (DEQ, 2003) unless noted otherwise. Default values from table updated October 3, 2008.

2) RBC assumes ratio of 1:6 for Chromium VI:Chromium III.

3) RBC for benzo(k)fluoranthene used as a surrogate.

4) RBC for total polychlorinated biphenyls (PCBs) used as a surrogate.

5) nv = Not volatile so RBC not applicable to this COPC for this pathway.

6) -- = COPC in that medium not applicable to this pathway.

7) mg/kg = Milligrams per kilogram.

8) µg/L = Micrograms per liter.

Table 4 - Risk Characterization: Non-Carcinogen
Swan Island Upland Facility - OU1

Receptor	Medium and Location	Pathway	Chemical	EPC		RBC	Hazard Quotient		Hazard Index	
				CT	RME		CT	RME	CT	RME
Occupational	Soil, 0 to 3 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Diesel-Range Organics Lead Nickel	37 19 22	54 89 23	70,000 800 20,000	5E-04 2E-02 1E-03	8E-04 1E-01 1E-03	3E-02	1E-01
Construction Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Diesel-Range Organics Lead Nickel	156 17 22	898 54 22	23,000 800 6,200	7E-03 2E-02 4E-03	4E-02 7E-02 4E-03	3E-02	1E-01
Excavation Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Diesel-Range Organics Lead Nickel	156 17 22	898 54 22	130,000 800 170,000	1E-03 2E-02 1E-04	7E-03 7E-02 1E-04	2E-02	7E-02

Notes:

- 1) EPC = Exposure Point Concentration; from Table 2.
- 2) CT = Central Tendency.
- 3) RME = Reasonable Maximum Exposure.
- 4) RBC = Risk-Based Concentration; from Table 3.
- 5) mg/kg = Milligrams per kilogram.
- 6) Shaded Cell = Hazard Quotient or Hazard Index exceeds acceptable level of 1.0.

Table 5 - Risk Screening: Non-Carcinogen Maximum Concentrations
Swan Island Upland Facility

Receptor	Medium and Location	Pathway	Chemical	EPC	RBC	Hazard Quotient	Hazard Index
				Max		Max	Max
Occupational	Soil, 0 to 3 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Diesel-Range Organics Lead Nickel	330 265 31	70,000 800 20,000	5E-03 3E-01 2E-03	3E-01
Construction Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Diesel-Range Organics Lead Nickel	15,000 265 31	23,000 800 6,200	7E-01 3E-01 5E-03	1E+00
Excavation Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Diesel-Range Organics Lead Nickel	15,000 265 31	130,000 800 170,000	1E-01 3E-01 2E-04	4E-01

Notes:

- 1) EPC = Exposure Point Concentration; from Table 2.
- 2) Max = Maximum detected; from Table 2.
- 3) RBC = Risk-Based Concentration; from Table 3.
- 4) mg/kg = Milligrams per kilogram.
- 5) Shaded Cell = Hazard Quotient or Hazard Index exceeds acceptable level of 1.0.

Table 6 - Risk Characterization: Carcinogen
Swan Island Upland Facility - OU1

Receptor	Medium	Pathway	Chemical	EPC		RBC	Individual Chemical Excess Risk		Cumulative Excess Risk	
				CT	RME		CT	RME	CT	RME
Occupational	Soil, 0 to 3 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Arsenic	2.7	2.9	1.7	2E-06	2E-06		
			Chromium	20	22	1,300	2E-08	2E-08		
			Aroclor 1260	0.048	0.15	0.98	5E-08	2E-07		
			Total PCBs	0.059	0.17	0.98	6E-08	2E-07		
			Naphthalene	0.0064	0.014	22	3E-10	6E-10		
			Benzo(a)anthracene	0.021	0.10	2.7	8E-09	4E-08		
			Benzo(b)fluoranthene	0.025	0.13	2.7	9E-09	5E-08		
			Benzo(k)fluoranthene	0.021	0.11	27	8E-10	4E-09		
			Benzo(a)pyrene	0.024	0.11	0.27	9E-08	4E-07		
			Indeno(1, 2, 3-cd)pyrene	0.022	0.10	2.7	8E-09	4E-08		
			Dibenz(a,h)anthracene	0.0076	0.017	0.27	3E-08	6E-08	2E-06	2E-06
			Benzo(g, h, l)perylene	0.023	0.029	27	8E-10	1E-09		
									1E-10	3E-10
		Vapor Intrusion	Naphthalene	0.011	0.026	93	1E-10	3E-10	1E-10	3E-10
			Naphthalene	0.011	0.026	26	4E-10	1E-09		
		Outdoor Air	Naphthalene	0.027	0.055	9,600	3E-12	6E-12	2E-07	8E-07
			Tetrachloroethene (PCE)	0.26	0.3	1,300	2E-10	2E-10		
			1,2-Dichloroethane (EDC)	0.66	1.5	3,600	2E-10	4E-10		
			Trichloroethene (TCE)	19	91	110	2E-07	8E-07	2E-07	8E-07
			Naphthalene	0.027	0.055	15,000	2E-12	4E-12		
			Tetrachloroethene (PCE)	0.26	0.3	8,600	3E-11	3E-11		
			1,2-Dichloroethane (EDC)	0.66	1.5	9,000	7E-11	2E-10		
			Trichloroethene (TCE)	19	91	650	3E-08	1E-07		
Soil and Vapor Intrusion		Ingestion, Direct Contact, Inhalation	(see above)						2E-06	3E-06
									2E-06	3E-06
Soil and Outdoor Air		Ingestion, Direct Contact, Inhalation	(see above)						2E-06	3E-06
									2E-06	3E-06

Please refer to notes at end of table.

Table 6 - Risk Characterization: Carcinogen
Swan Island Upland Facility - OU1

Receptor	Medium	Pathway	Chemical	EPC		RBC	Individual Chemical Excess Risk		Cumulative Excess Risk	
				CT	RME		CT	RME	CT	RME
Construction Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Arsenic	2.6	2.8	13	2E-07	2E-07		
			Chromium	20	22	6,400	3E-09	3E-09		
			Aroclor 1260	0.049	0.149	4.4	1E-08	3E-08		
			Total PCBs	0.067	0.165	4.4	2E-08	4E-08		
			Naphthalene	0.0087	0.0208	540	2E-11	4E-11		
			Benzo(a)anthracene	0.021	0.092	21	1E-09	4E-09		
			Benzo(b)fluoranthene	0.025	0.118	21	1E-09	6E-09		
			Benzo(k)fluoranthene	0.022	0.102	210	1E-10	5E-10		
			Benzo(a)pyrene	0.024	0.103	2.1	1E-08	5E-08		
			Indeno(1, 2, 3-cd)pyrene	0.022	0.092	21	1E-09	4E-09		
			Dibenz(a,h)anthracene	0.0080	0.0167	2.1	4E-09	8E-09		
			Benzo(g, h, i)perylene	0.022	0.087	210	1E-10	4E-10		
									2E-07	3E-07
Excavation Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Arsenic	2.6	2.8	370	7E-09	8E-09		
			Chromium	20	22	180,000	1E-10	1E-10		
			Aroclor 1260	0.049	0.15	120	4E-10	1E-09		
			Total PCBs	0.067	0.17	120	6E-10	1E-09		
			Naphthalene	0.009	0.021	15,000	6E-13	1E-12		
			Benzo(a)anthracene	0.021	0.092	590	4E-11	2E-10		
			Benzo(b)fluoranthene	0.025	0.12	590	4E-11	2E-10		
			Benzo(k)fluoranthene	0.022	0.10	5,900	4E-12	2E-11		
			Benzo(a)pyrene	0.024	0.10	59	4E-10	2E-09		
			Indeno(1, 2, 3-cd)pyrene	0.022	0.092	590	4E-11	2E-10		
			Dibenz(a,h)anthracene	0.008	0.017	59	1E-10	3E-10		
			Benzo(g, h, i)perylene	0.022	0.087	5,900	4E-12	1E-11		
									8E-09	1E-08

Notes:

1) EPC = Exposure Point Concentration; from Table 2.

2) CT = Central Tendency.

3) RME = Reasonable Maximum Exposure.

4) RBC = Risk-Based Concentration; from Table 3.

5) mg/kg = Milligrams per kilogram.

6) µg/L = Micrograms per liter.

7) Shaded Cell = Cumulative excess risk exceeds acceptable level of 1E-06 for individual chemicals or 1E-05 for cumulative risk.

Table 7 - Risk Screening: Carcinogen Maximum Concentrations
Swan Island Upland Facility

Receptor	Medium	Pathway	Chemical	EPC	RBC	Individual Chemical Excess Risk	Cumulative Excess Risk
				Max		Max	Max
Occupational	Soil, 0 to 3 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Arsenic	5.7	1.7	3E-06	
			Chromium	35	1,300	3E-08	
			Aroclor 1260	1.6	0.98	2E-06	
			Total PCBs	1.65	0.98	2E-06	
			Naphthalene	0.054	22	2E-09	
			Benzo(a)anthracene	0.22	2.7	8E-08	
			Benzo(b)fluoranthene	0.32	2.7	1E-07	
			Benzo(k)fluoranthene	0.28	27	1E-08	
			Benzo(a)pyrene	0.27	0.27	1E-06	
			Indeno(1, 2, 3-cd)pyrene	0.25	2.7	9E-08	
	Soil, 0 to 30 Ft, mg/kg	Vapor Intrusion	Naphthalene	0.15	93	2E-09	2E-09
		Outdoor Air	Naphthalene	0.15	26	6E-09	6E-09
	Groundwater, µg/L	Vapor Intrusion	Naphthalene	0.33	9,600	3E-11	
			Tetrachloroethene (PCE)	0.78	1,300	6E-10	
			1,2-Dichloroethane (EDC)	6.3	3,600	2E-09	
			Trichloroethene (TCE)	270	110	2E-06	2E-06
		Outdoor Air	Naphthalene	0.33	15,000	2E-11	
			Tetrachloroethene (PCE)	0.78	8,600	9E-11	
			1,2-Dichloroethane (EDC)	6.3	9,000	7E-10	
			Trichloroethene (TCE)	270	650	4E-07	4E-07
			(see above)				9E-06
			(see above)				7E-06

Please refer to notes at end of table.

Table 7 - Risk Screening: Carcinogen Maximum Concentrations
Swan Island Upland Facility

Receptor	Medium	Pathway	Chemical	EPC	RBC	Individual Chemical	Cumulative
				Max		Excess Risk	Excess Risk
Construction Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Arsenic	5.7	13	4E-07	
			Chromium	61	6,400	1E-08	
			Aroclor 1260	1.6	4.4	4E-07	
			Total PCBs	1.65	4.4	4E-07	
			Naphthalene	0.099	540	2E-10	
			Benzo(a)anthracene	0.22	21	1E-08	
			Benzo(b)fluoranthene	0.32	21	2E-08	
			Benzo(k)fluoranthene	0.28	210	1E-09	
			Benzo(a)pyrene	0.27	2.1	1E-07	
			Indeno(1, 2, 3-cd)pyrene	0.25	21	1E-08	
			Dibenz(a,h)anthracene	0.054	2.1	3E-08	
			Benzo(g, h, i)perylene	0.230	210	1E-09	
							1E-06
Excavation Worker	Soil, 0 to 15 Ft, mg/kg	Ingestion, Direct Contact, Inhalation	Arsenic	5.7	370	2E-08	
			Chromium	60.8	180,000	3E-10	
			Aroclor 1260	1.6	120	1E-08	
			Total PCBs	1.7	120	1E-08	
			Naphthalene	0.1	15,000	7E-12	
			Benzo(a)anthracene	0.2	590	4E-10	
			Benzo(b)fluoranthene	0.3	590	5E-10	
			Benzo(k)fluoranthene	0.3	5,900	5E-11	
			Benzo(a)pyrene	0.3	59	5E-09	
			Indeno(1, 2, 3-cd)pyrene	0.3	590	4E-10	
			Dibenz(a,h)anthracene	0.1	59	9E-10	
			Benzo(g, h, i)perylene	0.2	5,900	4E-11	
							4E-08

Notes:

1) EPC = Exposure Point Concentration; from Table 2.

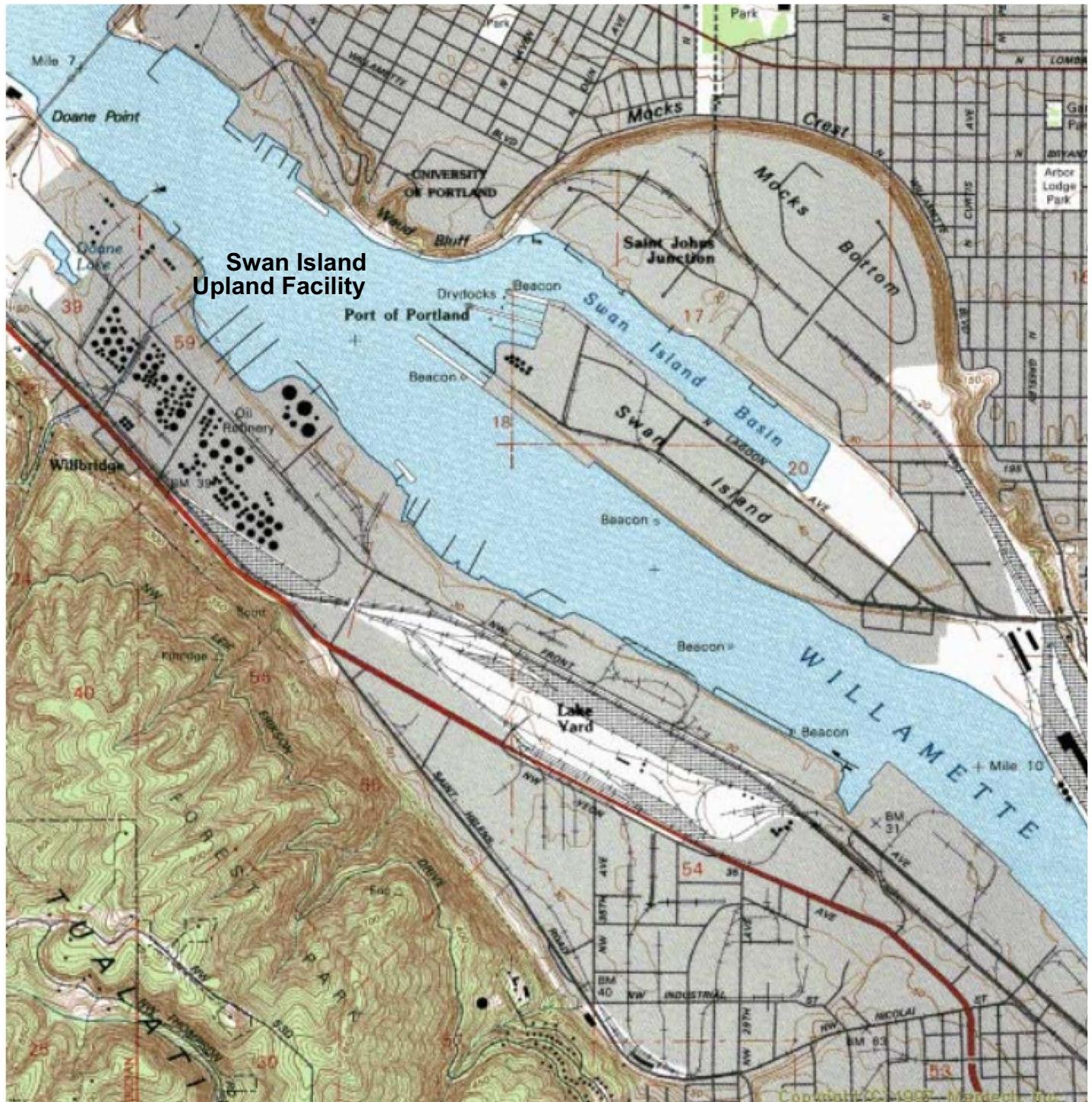
2) Max = Maximum detected; from Table 2.

3) RBC = Risk-Based Concentration; from Table 3.

4) mg/kg = Milligrams per kilogram.

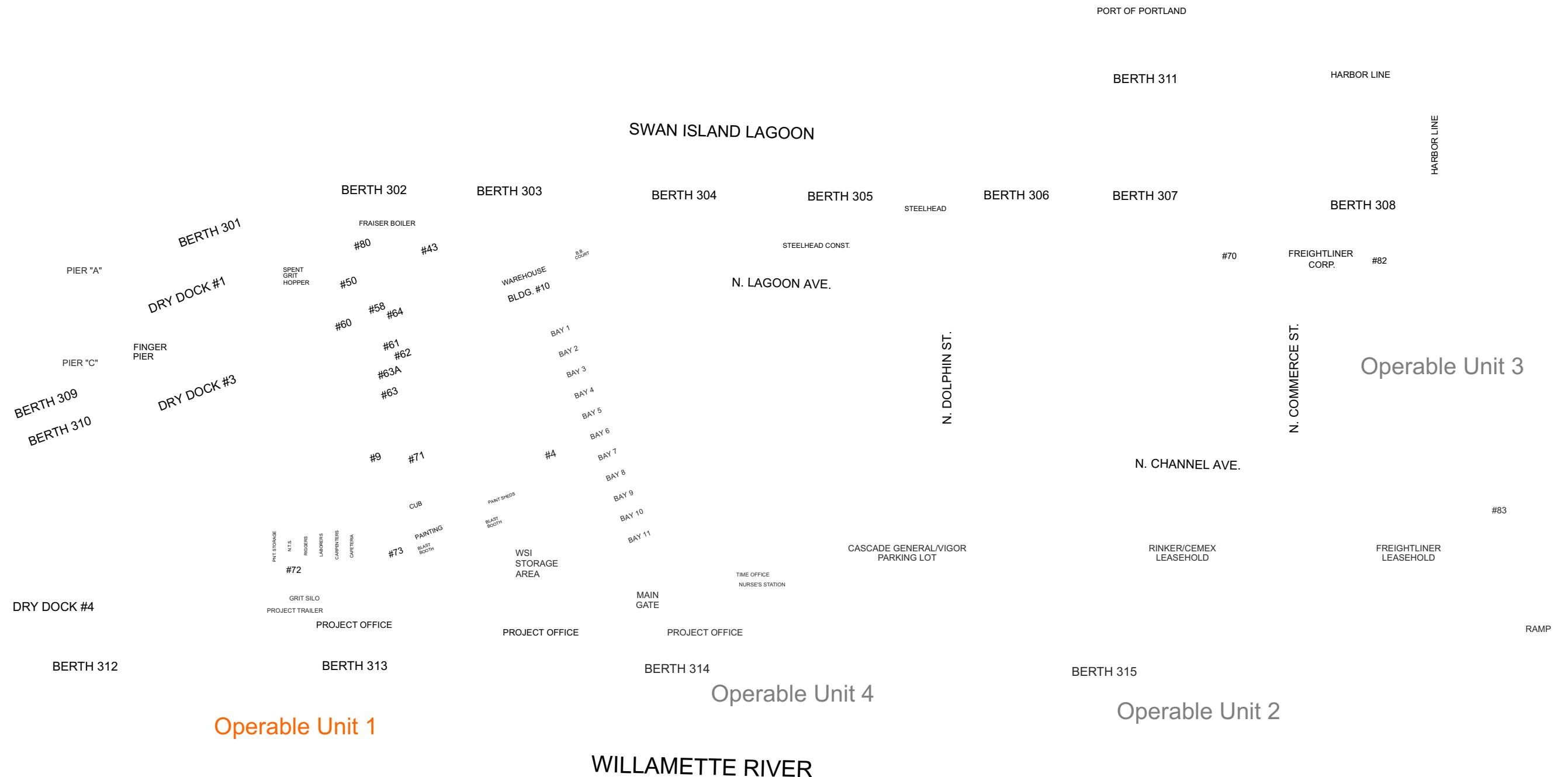
5) µg/L = Micrograms per liter.

6) Shaded Cell = Cumulative excess risk exceeds acceptable level of 1E-06 for individual chemicals or 1E-05 for cumulative risk.



Facility Location Map

Baseline Human Health Risk Assessment
Swan Island Upland Facility Operable Unit 1
Portland, Oregon



Legend:

- Operable Unit 1 Boundary
- Operable Unit 2 Boundary
- Operable Unit 3 Boundary
- Operable Unit 4 Boundary

0 400 800
Scale in Feet

Figure 2

Facility Plan
Baseline Human Health Risk Assessment
Swan Island Upland Facility Operable Unit 1
Portland, Oregon

Primary Sources	Primary Release Mechanisms	Secondary Sources	Transport Mechanisms	Tertiary Sources	Exposure Routes	Potential Receptors					
						Occupational	Construction	Excavation	Current	Future	Current
Historical Releases	Spills	Soil (0 to 30 Feet)	Bank Erosion	Surface Water	All	Source Control Evaluation					
				Sediment	All	Source Control Evaluation					
				Direct Contact	Direct Contact	+	+	-	+	-	+
			Volatileization	Outdoor Air	Inhalation	+	+	-	+	-	+
				Indoor Air	Inhalation	+	+	-	-	-	-
				Leaching	Inhalation	-	-	-	-	-	-
Groundwater	Pumping	Tap Water	Volatileization	Tap Water	Direct Contact	-	-	-	-	-	-
					Ingestion	-	-	-	-	-	-
				Outdoor Air	Inhalation	+	+	-	+	-	+
			Discharge	Indoor Air	Inhalation	+	+	-	-	-	-
				Direct Contact	Direct Contact	-	-	-	-	-	-
				Surface Water	All	Source Control Evaluation					

Legend:

- ⊕ Primary Exposure Route
- No Exposure Via This Route

Conceptual Site Model
 Baseline Human Health Risk Assessment
 Swan Island Upland Facility Operable Unit 1
 Portland, Oregon

Appendix A

Summary Chemical Data Tables

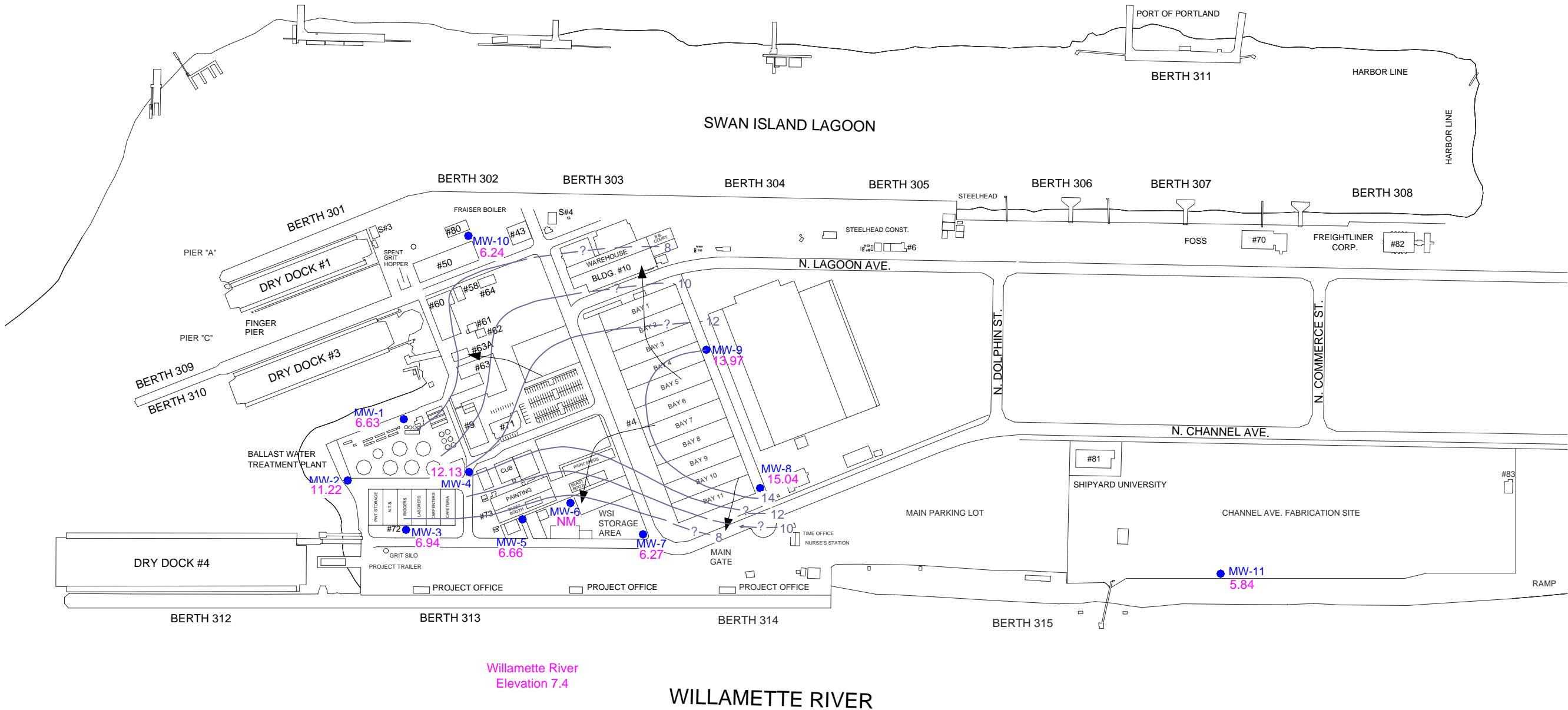
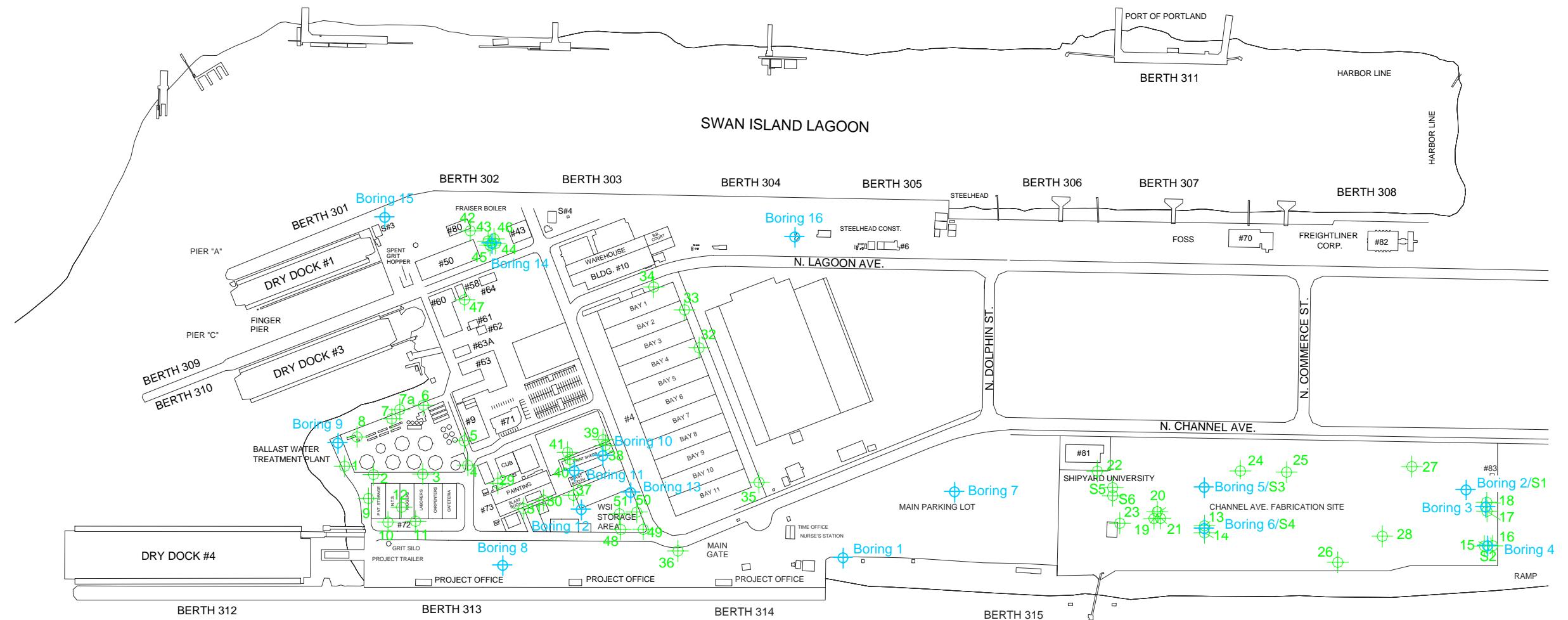


Figure 5
December 17, 2007 Groundwater Elevations
2007 Annual Groundwater Sampling Results, Swan
Island Upland Facility

BRIDGEWATER GROUP, INC.



Legend:

- Phase IA RI Sampling Locations
- Portland Shipyard Soil
- Investigation Sampling Locations

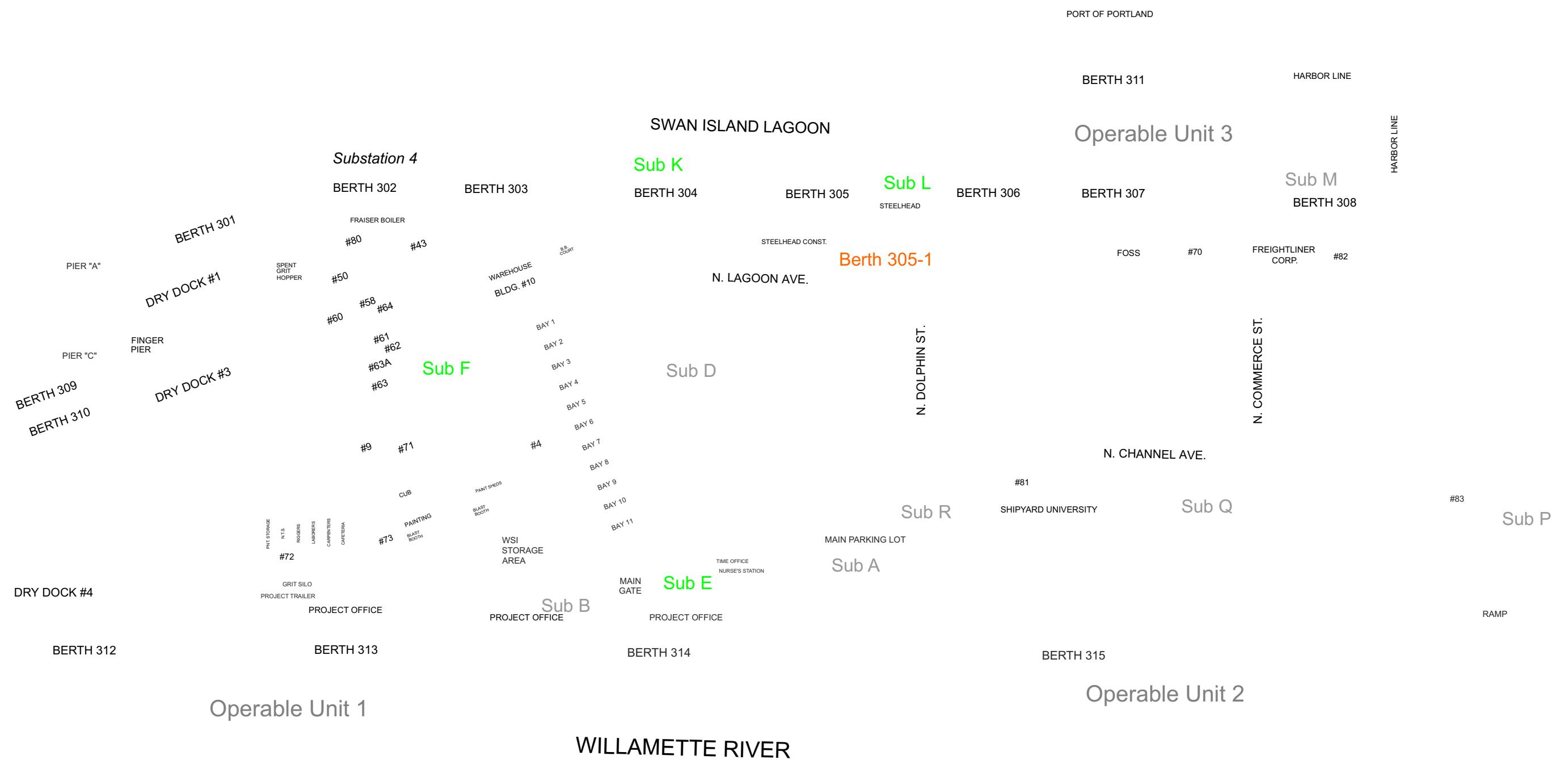
0 ft. 250 ft. 500 ft. 1000 ft.



Figure 10

Soil Boring Locations
SIUF OU1 Phase II RI Work Plan Addendum

BRIDGEWATER GROUP, INC.



Legend:

- Operable Unit 1 Boundary
 - Operable Unit 2 Boundary
 - Operable Unit 3 Boundary
 - Sub K** Kaiser Shipyard Substation Location - 1942 Plan (Locations Approximate)
- Soil samples collected at North, South, East, and West corners
 - Berth 305-1** Boring Location
 - Substation 4* Portland Shipyard Substation Location

N E
C
W S

Site Exploration Plan

r Substation Sampling Results Addendum

Swan Island Upland Facility

Portland, Oregon

**Former Substation Sampling Results Addendum
Swan Island Upland Facility
Portland, Oregon**

Table 3
Metal Concentrations in Soil (mg/kg) Compared to PRGs and SLVs
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Cadmium	Chromium ^d	Copper	Lead	Mercury	Nickel	Silver	Zinc	Barium	Selenium
<i>Industrial Soil PRG^a</i>				410	1.6	450	450	41,000	800	310	NC	5,100	100,000	67,000	5,100
<i>Soil SLV^b</i>				NC	10	6	4	190	16	1.5	320	NC	60	85	2
<i>Birds</i>				15	29	125	340,000	390	4,000	73	625	NC	20,000	638	25
<i>Mammals</i>				4	7	1	42	36	17	0.07	38	1	86	NC	2
<i>Background^c</i>															
BWTP	4800-010209-101	B-1	2.0	11 U	2.8	1.1 U	16.2	20.8	10.7	0.03	20	2.2 U	61.5	NA	NA
	4800-010209-103	B-1	21.0	17.1	5.4	1.2 U	48.3	93.3	541	4.71	28.9	2.4 U	267	NA	NA
	4800-010209-107	B-2	2.0	11.1 U	3.1	1.1 U	23.1	28.9	7.2	0.55	23.9	2.2 U	80.9	NA	NA
	4800-010212-109	B-2	21.0	10.4 U	3	1 U	19.7	21	4.3	0.02 U	25.4	2.1 U	54.1	NA	NA
	4800-010212-110	B-3	2.0	10.8 U	2.7	1.1 U	15.3	25	25.6	0.03	17.7	2.2 U	71.2	NA	NA
	4800-010212-112	B-3	15.0	11.2 U	2.8 U	1.1 U	17.1	16.2	2.9	0.02 U	19.6	2.2 U	49.6	NA	NA
	4800-010212-116	B-4	2.0	12 U	3.3	1.2 U	26	21.1	5.8	0.05	24.3	2.4 U	54.7	NA	NA
	4800-010212-117	B-4	29.0	10.3 U	3.3	1 U	29.9	26.8	6.2	0.06	27.4	2.1 U	58.6	NA	NA
	4800-010212-118	B-5	2.0	11.7 U	2.9 U	1.2 U	30.9	56.4	265	0.52	21.3	2.4 U	433	NA	NA
	4800-010212-119	B-5	29.0	11.8 U	3.6	1.2 U	36.5	36.1	6.3	0.02 U	32.9	2.4 U	68.2	NA	NA
	4800-010213-120	B-6	2.0	11.3 U	3.2	1.1 U	28.7	51.3	29	0.11	21.1	2.3 U	94.2	NA	NA
	4800-010213-121	B-6	29.0	10.6 U	2.7	1.1 U	25.6	29.9	6.6	0.06	19.1	2.1 U	67.1	NA	NA
	4800-010213-123	B-7	2.0	11.2 U	3.3	1.1 U	29.8	104	27	0.17	26.7	2.3 U	91.5	NA	NA
	4800-010216-148	B-7a	2.0	11.4 U	3.8	1.1 U	35.4	91.5	32.9	0.23	27.7	2.3 U	106	NA	NA
	4800-010216-149	B-7a	14.0	10.4 U	3.2	1 U	29.5	27.5	4.8	0.02 U	28.7	2.1 U	61.7	NA	NA
	4800-010213-124	B-8	2.0	11.3 U	3.8	1.1 U	21.8	77.7	24	0.21	23.3	2.3 U	85.8	NA	NA
	4800-010214-126	B-8	30.0	12.1 U	3	1.2 U	43.6	62.3	16.4	0.09	25	2.4 U	88.5	NA	NA
	PS-S-09-01	Boring 9	0-2	NA	1.97	0.5 U	9.88	NA	9.14	0.1 U	NA	0.5 U	NA	89.5	0.5 U
	PS-S-09-02	Boring 9	14-16	NA	4.05	0.5 U	60.8	NA	57	0.648	NA	0.5 U	NA	144	0.575
Building 72	4800-010214-127	B-9	2.0	11.3 U	3.8	1.1 U	21.8	77.7	24	0.21	23.3	2.3 U	85.8	NA	NA
	4800-010214-128	B-9	26.0	12 U	2.7	1.2 U	23	26.4	8.1	0.04	18.9	2.4 U	70.6	NA	NA
	4800-010214-129	B-10	2.0	11.4 U	1.1 U	1.1 U	17.4	15	3.6	0.04	21	2.3 U	53.6	NA	NA
	4800-010214-130	B-10	15.5	12.3 U	1.2 U	1.2 U	16	16.6	3.6	0.03	18.2	2.5 U	50.2	NA	NA
	4800-010216-146	B-11	2.0	11.4 U	1.1 U	1.1 U	17.4	15	3.6	0.04	21	2.3 U	53.6	NA	NA
	4800-010216-147	B-11	29.0	21.1	16	1.2 U	311	128	871	0.34	91.4	2.3 U	947	NA	NA
	4800-010216-144	B-12	2.0	10.5 U	2.9	1.1 U	16.7	16.3	2.6	0.01	21.1	2.1 U	53.3	NA	NA
	4800-010216-145	B-12	30.0	11.5 U	3.4	1.2 U	31.3	29.8	4.3	0.03	29.6	2.3 U	65.5	NA	NA

U = not detected

Deep subsurface samples were not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^c DEQ Default soil background concentrations for metals, October 28, 2002.

^d SLV for Chromium III; PRG and background concentration for total chromium.

NA = not analyzed

NC = no screening or hot spot level

Shading indicates sampling result exceeds estimated background concentration and PRG

Box indicates result exceeds estimated background concentration and SLV.

Dashed box indicates result exceeds hot spot level.

Table 4
Polychlorinated Biphenyl (PCB) Concentrations in Soil (ug/kg) Compared to PRGs and SLVs
Ballast Water Treatment Plant (BWTP) and Building 72
Swan Island Upland Facility (SIUF) Remedial Investigation

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs ^c
<i>Industrial Soil PRG^a</i>				21,000	740	740	740	740	740	740	740	740	NC
<i>Soil SLV^b</i>				NC 100,000	NC NC	NC NC	1,500 5,000	NC NC	700 4,000	NC NC	NC NC	NC NC	NC 4,000
<i>Birds</i>													
<i>Mammals</i>													
<i>Industrial Hot Spot Level^d</i>													
BWTP	4800-010209-101	B-1	2.0	10 U	20 U	10 U	10 U	10 U	10 U	19	NA	NA	24
	4800-010209-103	B-1	21.0	10 U	20 U	10 U	10 U	10 U	10 U	370	NA	NA	375
	4800-010209-107	B-2	2.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010212-109	B-2	21.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010212-110	B-3	2.0	10 U	20 U	10 U	10 U	10 U	10 U	100	NA	NA	105
	4800-010212-112	B-3	15.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010212-116	B-4	2.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010212-117	B-4	29.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010212-118	B-5	2.0	100 U	200 U	100 U	100 U	100 U	100 U	1,600	NA	NA	1,650
	4800-010212-119	B-5	29.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010213-120	B-6	2.0	10 U	20 U	10 U	10 U	10 U	10 U	100	NA	NA	105
	4800-010213-121	B-6	29.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010213-123	B-7	2.0	10 U	20 U	10 U	10 U	10 U	10 U	520	NA	NA	525
	4800-010216-148	B-7a	2.0	10 U	20 U	10 U	10 U	10 U	10 U	190	NA	NA	195
	4800-010216-149	B-7a	14.0	10 U	20 U	10 U	10 U	10 U	66	25	NA	NA	91
	4800-010213-124	B-8	2.0	50 U	100 U	50 U	50 U	50 U	50 U	770	NA	NA	795
	4800-010214-126	B-8	30.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010216-146	B-11	2.0	10 U	20 U	10 U	10 U	10 U	220	160	NA	NA	380
	4800-010216-147	B-11	29.0	10 U	20 U	10 U	10 U	10 U	26	25	NA	NA	51
	PS-S-09-01	Boring 9	0-2	50 U	50 U	50 U	50 U	50 U	50 U	51.3	50 U	50 U	76
	PS-S-09-02	Boring 9	14-16	50 U	50 U	50 U	50 U	50 U	50 U	437	50 U	50 U	462
Building 72	4800-010216-144	B-12	2.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15
	4800-010216-145	B-12	30.0	10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	15

U = not detected

Deep subsurface samples were not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^c Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit for samples with concentrations reported as not detected.

^d Industrial Land Use, Highly Concentrated Hot Spot Levels adjusted for 2004 PRGs, Final, Pre-Calculated Hot Spot Look-Up Tables, October 20, 1998

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG.

Box indicates result exceeds SLV.

Table 5
Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg) Compared to RBCs
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Hydrocarbon Identification (HCID) Results			NWTPH Results		418.1 Results		
				Gasoline Range Organics	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics	Residual Range Organics	Heavy Oil Range Hydrocarbons		
Risk-Based Concentration^a											
<i>Soil Ing., Dermal Contact, Inhalation</i>											
<i>Occupational</i>											
<i>Construction Worker</i>											
<i>Excavation Worker</i>											
<i>Vol. to Outdoor Air - Occupational</i>											
<i>Vapor Intr. Into Buildings - Occupational</i>											
<i>Leaching to Groundwater - Occupational</i>											
BWTP	4800-010209-101	B-1	2.0	20 U	50 U	100 U	1,100	330	569		
	4800-010209-103	B-1	21.0	20 U	DET	DET					
	4800-010209-105	B-2	30.0	20 U	DET	DET					
	4800-010209-107	B-2	2.0	20 U	50 U	100 U					
	4800-010212-109	B-2	21.0	20 U	50 U	100 U					
	4800-010212-110	B-3	2.0	20 U	DET	DET					
	4800-010212-112	B-3	15.0	20 U	DET	DET					
	4800-010212-114	B-3	22.0	20 U	50 U	100 U					
	4800-010212-116	B-4	2.0	20 U	50 U	100 U					
	4800-010212-117	B-4	29.0	20 U	50 U	100 U					
	4800-010212-118	B-5	2.0	20 U	DET	DET					
	4800-010212-119	B-5	29.0	20 U	50 U	100 U					
	4800-010213-120	B-6	2.0	20 U	50 U	100 U					
	4800-010213-121	B-6	29.0	20 U	50 U	100 U					
	4800-010213-123	B-7	34.0	20 U	50 U	100 U					
	4800-010216-148	B-7a	2.0	20 U	50 U	100 U					
	4800-010216-149	B-7a	14.0	20 U	DET	DET					
	4800-010213-124	B-8	2.0	20 U	50 U	100 U					
	4800-010214-126	B-8	30.0	20 U	50 U	100 U					
	PS-S-09-01	Boring 9	0-2				820	72	1,030		
	PS-S-09-02	Boring 9	14-16								
Building 72	4800-010214-127	B-9	2.0	20 U	50 U	100 U					
	4800-010214-128	B-9	26.0	20 U	50 U	100 U					
	4800-010214-129	B-10	2.0	20 U	50 U	100 U					
	4800-010214-130	B-10	15.5	DET	DET	DET					
	4800-010214-131	B-10	18.0	20 U	50 U	DET					
	4800-010216-146	B-11	2.0	20 U	50 U	100 U					
	4800-010216-147	B-11	29.0	20 U	50 U	100 U					
	4800-010216-144	B-12	2.0	20 U	50 U	100 U					
	4800-010216-145	B-12	30.0	20 U	50 U	100 U					

Deep subsurface samples were not included in screening.

^a DEQ, Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

U = not detected

DET = detected

Shading indicates sampling result exceeds RBC.

Table 6
Benzene, Toluene, Ethylbenzene and Xylene (BTEX) Concentrations in Soil (mg/kg) Compared to PRGs, RBCs and SLVs
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene
<i>Industrial Soil PRG^a</i>				1.4	520	400	420	420
<i>Risk-Based Concentration (RBC)^b</i>								
<i>Soil Ing., Dermal Contact, Inhalation</i>								
<i>Occupational</i>				34	68,000	74,000	24,000	24,000
<i>Construction Worker</i>				340	39,000	28,000	19,000	19,000
<i>Excavation Worker</i>				9,400	1,100,000	770,000	520,000	520,000
<i>Vol. to Outdoor Air - Occupational</i>				48	51,000	140,000	14,000	14,000
<i>Vapor Intr. Into Buildings - Occupational</i>				1.2	2,200	11,000	1,300	1,300
<i>Leaching to Groundwater - Occupational</i>				0.052	180	620	100	100
<i>Soil SLV^c</i>				NC	NC	NC	NC	NC
<i>Birds</i>				3,300	1,440	NC	NC	NC
<i>Mammals</i>								
BWTP	4800-010209-101	B-1	2.0	0.056 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010209-103	B-1	21.0	0.072 U	0.14 U	0.14 U	0.14 U	0.14 U
	4800-010212-110	B-3	2.0	0.054 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010212-112	B-3	15.0	0.056 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010212-118	B-5	2.0	0.059 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010212-119	B-5	29.0	0.071 U	0.14 U	0.14 U	0.14 U	0.14 U
	4800-010213-120	B-6	2.0	0.057 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010216-148	B-7a	2.0	0.057 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010216-149	B-7a	14.0	0.063 U	0.13 U	0.13 U	0.13 U	0.13 U
Building 73	4800-010214-127	B-9	2.0	0.056 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010214-128	B-9	26.0	0.061 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010214-129	B-10	2.0	0.057 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010214-130	B-10	15.5	0.058 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010214-131	B-10	18.0	0.06 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010216-144	B-12	2.0	0.053 U	0.11 U	0.11 U	0.11 U	0.11 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 7
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
Industrial Soil PRG^a				190,000	NC	NC	29,000,000	1,600,000	26,000,000	NC	100,000,000	22,000,000	29,000,000
Risk-Based Concentration (RBC)^b													
<i>Soil Ing., Dermal Contact, Inhalation</i>													
<i>Occupational</i>				770,000	NC	NC	41,000,000	NC	35,000,000	NC	270,000,000	29,000,000	21,000,000
<i>Construction Worker</i>				710,000	NC	NC	16,000,000	NC	12,000,000	NC	90,000,000	8,900,000	6,700,000
<i>Excavation Worker</i>				20,000,000	NC	NC	450,000,000	NC	330,000,000	NC	3.E+09	250,000,000	190,000,000
<i>Vol. to Outdoor Air - Occupational</i>				940,000	NC	NC	700,000,000	NC	4.E+09	NC	7.E+10	1.E+11	2.E+11
<i>Vapor Intr. Into Buildings - Occupational</i>				3,400,000	NC	NC	3.E+09	NC	1.E+10	NC	2.E+11	5.E+11	6.E+11
<i>Leaching to Groundwater - Occupational</i>				15,000	NC	NC	2,200,000	NC	4,000,000	NC	65,000,000	190,000,000	140,000,000
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Birds</i>				3,900,000	NC	NC	NC	2	NC	NC	NC	NC	NC
<i>Mammals</i>													
Industrial Hot Spot Level^d													
BWTP	4800-010209-101	B-1	2.0	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	14	5.5 U	31	37
	4800-010209-103	B-1	21.0	150	260	92	61	38	99	620	140	510	890
	4800-010212-110	B-3	2.0	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	12	21
	4800-010212-112	B-3	15.0	99	1,700	56	120	390	1,100	2,500	56 U	56 U	340
	4800-010212-118	B-5	2.0	10	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	28	6.5	62	60
	4800-010212-119	B-5	29.0	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010216-148	B-7a	2.0	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	14	6.2 U	40	46
	4800-010216-149	B-7a	14.0	25	51	14	130	120	350	560	1,500	370	340
	4800-010214-126	B-8	30.0	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
Building 73	4800-010214-127	B-9	2.0	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	6.1	5.6 U	12	14
	4800-010214-128	B-9	26.0	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	10	13
	4800-010214-129	B-10	2.0	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010214-130	B-10	15.5	15	11	7.3	10	11	20	84	17	120	160

U = not detected

Deep subsurface samples were not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^d Industrial Land Use, Highly Concentrated Hot Spot Levels adjusted for 2004 PRGs, Final, Pre-Calculated Hot Spot Look-Up Tables, October 20, 1998

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 7
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
<i>Industrial Soil PRG^a</i>				2,100	210,000	2,100	21,000	210	2,100	210	NC
<i>Risk-Based Concentration (RBC)^b</i>											
<i>Soil Ing., Dermal Contact, Inhalation</i>											
<i>Occupational</i>				2,700	270,000	2,700	27,000	270	2,700	270	NC
<i>Construction Worker</i>				21,000	2,100,000	21,000	210,000	2,100	21,000	2,100	NC
<i>Excavation Worker</i>				590,000	59,000,000	590,000	5,900,000	59,000	590,000	59,000	NC
<i>Vol. to Outdoor Air - Occupational</i>				130,000,000	1.E+09	29,000,000	3.E+10	93,000,000	5.E+09	2.E+09	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				460,000,000	460,000,000	110,000,000	9.E+10	340,000,000	2.E+10	8.E+09	NC
<i>Leaching to Groundwater - Occupational</i>				67,000	6,700,000	210,000	2,100,000	17,000	580,000	64,000	NC
<i>Soil SLV^c</i>				NC	NC	NC	NC	NC	NC	NC	NC
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	125,000	NC	NC	NC
<i>Industrial Hot Spot Level^d</i>								21,000			
BWTP	4800-010209-101	B-1	2.0	17	21	21	17	22	25	5.5 U	24
	4800-010209-103	B-1	21.0	310	380	250	190	230	290	50	300
	4800-010212-110	B-3	2.0	8.4	13	12	12	15	17	5.4 U	19
	4800-010212-112	B-3	15.0	8.4 U	13 U	12 U	56 U	56 U	56 U	56 U	19 U
	4800-010212-118	B-5	2.0	17	33	24	19	18	19	5.9 U	24
	4800-010212-119	B-5	29.0	17 U	33 U	24 U	7.1 U	7.1 U	7.1 U	7.1 U	24 U
	4800-010216-148	B-7a	2.0	30	36	33	32	34	34	7.4	31
	4800-010216-149	B-7a	14.0	160	350	180	150	160	130	31	120
	4800-010214-126	B-8	30.0	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010214-127	B-9	2.0	7.4	9.1	7.2	7.5	7.2	7.8	5.6 U	7.3
Building 73	4800-010214-128	B-9	26.0	6.6	7.3	7.2 U	6.1 U	6.1 U	6.1 U	6.1 U	7.3 U
	4800-010214-129	B-10	2.0	6.6 U	7.3 U	ND U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010214-130	B-10	15.5	69	92	53	61	62	49	10	44

U = not detected

Deep subsurface samples were not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004.

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

DEQ, Risk Based Decision Making for the Contaminated Sites September 22, 2003

^c DEQ Level II Screening

^d Industrial Land Use, High

NA = not analyzed

NA = not analyzed
NC = no screening level

NC = no screening test

Shading indicates sampling

Box indicates result exceeded

Table 9
Polychlorinated Biphenyl (PCB) Concentrations in Soil (ug/kg) Compared to Soil/Catch Basin Screening Levels
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs ^b
<i>Toxicity SLV^a</i>				530	NC	NC	NC	1,500	300	200	NC	NC	676
<i>Bioaccumulation SLV^a</i>				420	NC	NC	2	4	10	NC	NC	NC	NC
BWTP	4800-010209-101	B-1	2.0	10 U	20 U	10 U	10 U	10 U	10 U	19	NA	NA	24
	4800-010209-107	B-2	2.0	10 U	20 U	10 U	NA	NA	15				
	4800-010212-110	B-3	2.0	10 U	20 U	10 U	10 U	10 U	10 U	100	NA	NA	105
	4800-010212-116	B-4	2.0	10 U	20 U	10 U	NA	NA	15				
Building 72	4800-010216-144	B-12	2.0	10 U	20 U	10 U	NA	NA	15				

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit for samples with concentrations reported as not detected.

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 10
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
<i>Toxicity SLV^a</i>				561	200	200	300	NC	536	1,170	845	2,230	1,520
<i>Bioaccumulation SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
BWTP	4800-010209-101	B-1	2.0	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	14	5.5 U	31	37
	4800-010212-110	B-3	2.0	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	12	21
Building 73	4800-010214-127	B-9	2.0	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	6.1	5.6 U	12	14
	4800-010214-129	B-10	2.0	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 10
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Ballast Water Treatment Plant (BWTP) and Building 72
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
<i>Toxicity SLV^a</i>				1,050	1,290	NC	13,000	1,450	100	1,300	300
<i>Bioaccumulation SLV^a</i>				NC	NC	NC	NC	100	NC	NC	NC
BWTP	4800-010209-101	B-1	2.0	17	21	21	17	22	25	5.5 U	24
	4800-010212-110	B-3	2.0	8.4	13	12	12	15	17	5.4 U	19
Building 73	4800-010214-127	B-9	2.0	7.4	9.1	7.2	7.5	7.2	7.8	5.6 U	7.3
	4800-010214-129	B-10	2.0	6.6 U	7.3 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 11**BTEX Concentrations in Soil (mg/kg) Compared to Soil/Catch Basin Screening Levels****Ballast Water Treatment Plant (BWTP) and Building 72****SIUF OU1 Phase II RI Work Plan Addendum**

Area of Investigation	Sample No.	Sample Location	Sample Depth (ft)	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene
<i>Toxicity SLV^a</i>				NC	NC	NC	NC	NC
<i>Bioaccumulation SLV^a</i>				NC	NC	NC	NC	NC
BWTP	4800-010209-101	B-1	2.0	0.056 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010212-110	B-3	2.0	0.054 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010212-118	B-5	2.0	0.059 U	0.12 U	0.12 U	0.12 U	0.12 U
Building 73	4800-010214-127	B-9	2.0	0.056 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010214-129	B-10	2.0	0.057 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010216-144	B-12	2.0	0.053 U	0.11 U	0.11 U	0.11 U	0.11 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 12
Total Metal Concentrations in Groundwater (ug/L) Compared to Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Antimony, Total	Arsenic, Total	Cadmium, Total	Chromium, Total	Copper, Total	Lead, Total	Mercury, Total	Nickel, Total	Silver, Total	Zinc, Total
<i>Human Health Drinking Water PRG^a</i>					15	0.045	18	NC	1,500	NC	11	730	180	11,000
<i>Human Health Drinking Water MCL^a</i>					6	10	5	100	1,300	15	2	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					64	0.014	NC	NC	NC	NC	0.0146	460	NC	2,600
<i>Ecological SLV^a</i>					1,600	150	0.094	74	2.9	0.54	0.77	16	0.12	36.5
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.2 U	9.9	0.68	117	240	46.7	0.2 U	88.6	0.27	233
		3/26/02	4800-020326-265		0.1 U	5.1	0.32	44.5	90.7	16.4	0.55	38.9	0.22	106
		7/1/02	4800-020701-281		0.1 U	13.4	0.1 U	10.0	24.2	5.96	0.2 U	37.4	0.07	21.2
		10/8/02	4800-021008-296		0.1 U	5.8	0.35	37.1	74.5	15.7	0.2 U	39.3	0.13	76.8
		12/2/03	4800-031202-412	X	0.1 U	9.8	0.14	1.1	1.7 N	0.14	0.2 U	17.6	0.04 U	1.1
		12/2/03	4800-031202-412		0.1 U	10.5	0.17	0.7	2.2 N	0.11	0.2 U	19.1	0.04 U	1.2
		1/5/05 ^e	6527-050105-421	X	0.05 U	9.8	0.05	0.5	1.4	0.10	0.2 U	17.2	0.02 U	1.4
		1/5/05 ^e	6527-050105-421		0.05 U	9.4	0.06	0.5	2.5	0.13	0.2 U	17.6	0.02 U	2.2
		12/13/05	6527-051213-431		50 U	12	5 U	5 U	10 U	2 U	0.2 U	20 U	10 U	10 U
		12/13/05	6527-051213-431	X	50 U	16.6	5 U	5 U	10 U	2 U	0.2 U	20 U	10 U	10 U
MW-2		12/18/01	4800-011218-256		0.2 U	6.3	0.32	28.5	44.3	11.1	0.2 U	44.6	0.1	68.1
		12/18/01	4800-011218-256	X	0.1 U	3.2	0.17	16.2	25.9	6.82	0.2 U	23.3	0.05	36.7
		3/26/02	4800-020326-266		0.05 U	3.4	0.05 U	2.1	2.6	0.79	0.2 U	18.8	0.04	3.3
		7/1/02	4800-020701-282		0.05 U	11.8	0.05 U	1.3	1.3	0.16	0.2 U	15.5	0.02 U	5.2
		7/1/02	4800-020701-282-DUP	X	0.05 U	12.3	0.05 U	1.3	0.4	0.15	0.2 U	14.6	0.02 U	0.9
		10/8/02	4800-021008-297		0.1 U	2.8	0.1 U	4.6	8.3	3.46	0.2 U	23.3	0.04 U	10.4
MW-3		12/18/01	4800-011218-255		0.1 U	3.0	0.19	6.3	8.6	1.81	0.2 U	11.3	0.03	13.6
		3/27/02	4800-020327-267		0.25 U	16.4	0.49	74.3	109	27.1	0.23	88.4	0.35	217
		7/2/02	4800-020702-283		0.1 U	6.2	0.12	7.7	15.0	3.78	0.2 U	9.6	0.04 U	21.2
		10/8/02	4800-021008-298		0.1 U	7.1	0.14	9.2	15.7	3.83	0.2 U	11.8	0.04	22.7
		3/26/03	4800-030326-402		0.05 U	2.5	0.05 U	6.2	0.5	0.09	0.2 U	5.2	0.02 U	28.0
		12/2/03	4800-031202-411		0.1	9.7	0.21	1.6	2.08 N	0.36	0.2 U	8.5	0.04 U	2.0
		1/5/05 ^e	6527-050105-422		0.05 U	10	0.07	0.7	1.9	0.29	0.2 U	5.9	0.02 U	2.0
		12/14/05	6527-051214-433		50 U	11	5 U	5 U	10 U	2 U	0.2 U	20 U	10 U	10 U
		12/18/01	4800-011218-254		0.1 U	5.3	0.05 U	3.7	3.3	0.81	0.2 U	6.4	0.02 U	6.2
		3/27/02	4800-020327-268		0.05 U	2.2	0.05 U	0.5	0.3	0.1	0.2 U	5.8	0.02 U	0.8
MW-4		7/2/02	4800-020702-284		0.05 U	2.4	0.05 U	0.5	0.4	0.04	0.2 U	5.4	0.02 U	1.0
		10/8/02	4800-021008-299		0.05 U	2.2	0.05 U	0.3	0.5	0.1	0.2 U	5.3	0.02 U	0.9
		3/26/03	4800-030326-403-upper		0.05 U	0.5 U	0.05 U	0.8	0.5	0.02 U	0.2 U	5.3	0.02 U	17.6
		3/26/03	4800-030326-404-upper	X	0.05 U	0.5 U	0.05 U	0.7	0.5	0.02 U	0.2 U	5.1	0.02 U	16.3
		3/26/03	4800-030326-405-lower		0.05 U	2.1	0.05 U	1.1	0.4	0.05	0.2 U	5.7	0.02 U	1.9
		12/18/01	4800-011218-257		0.1 U	0.5 U	0.18	2.7	2.6	0.24	0.2 U	5.4	0.02 U	8.0
		3/27/02	4800-020327-269		0.05 U	2.3	0.05 U	3.4	3.4	0.84	0.2 U	5.2	0.05	5.9
MW-5		7/2/02	4800-020702-285		0.05 U	1.1	0.05 U	2.1	1.8	0.32	0.2 U	4.4	0.02 U	2.4
		10/8/02	4800-021008-300		0.11	4.2	0.1 U	6.3	8.3	2.07	0.2 U	8.5	0.04 U	14.3
		12/18/01	4800-011218-258		0.2 U	2.5	0.17	14.2	17.9	3.27	0.2 U	18.5	0.04 U	30.1
		3/27/02	4800-020327-270		0.33	6.4	0.25	26.0	27.8	7.07	0.2 U	86.9	0.36	55.7
MW-6		7/2/02	4800-020702-286		0.1 U	2.0	0.1 U	12.9	14.9	4.41	0.2 U	22.2	0.04 U	28.2
		10/8/02	4800-021008-301		0.1 U	2.2	0.1 U	12.9	14.5	4.25	0.2 U	18.2	0.04 U	28.9
		12/3/03	4800-031203-414		0.1 U	1 U	0.13	0.7	1.42 N	0.05	0.2 U	5.1	0.04 U	1.4
		1/6/05 ^e	6527-050106-424		0.05 U	0.5 U	0.02 U	0.2 U	2.8	0.16	0.2 U	3.3	0.02 U	6.5
		12/14/05	6527-051214-436		50 U	5 U	5 U	5 U	10 U	2 U	0.2 U	20 U	10 U	10 U

Table 12
Total Metal Concentrations in Groundwater (ug/L) Compared to Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Antimony, Total	Arsenic, Total	Cadmium, Total	Chromium, Total	Copper, Total	Lead, Total	Mercury, Total	Nickel, Total	Silver, Total	Zinc, Total
<i>Human Health Drinking Water PRG^a</i>					15	0.045	18	NC	1,500	NC	11	730	180	11,000
<i>Human Health Drinking Water MCL^a</i>					6	10	5	100	1,300	15	2	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					64	0.014	NC	NC	NC	NC	0.0146	460	NC	2,600
<i>Ecological SLV^a</i>					1,600	150	0.094	74	2.9	0.54	0.77	16	0.12	36.5
MW-7		12/18/01	4800-011218-259	X	0.2 U	2.4	0.2	8.4	9.2	1.63	0.2 U	14.8	0.04 U	15.6
		3/28/02	4800-020328-272		0.25 U	17.2	0.25 U	46.9	60.1	14.6	0.2 U	55.1	0.21	119
		3/28/02	4800-020328-273		0.25 U	14.6	0.25 U	26.4	32.8	7.48	0.2 U	35.1	0.16	67.4
		7/2/02	4800-020702-287		0.1 U	6.6	0.1 U	8.4	11.5	2.99	0.2 U	12.1	0.04 U	18.7
		10/9/02	4800-021009-303		0.1 U	6.0	0.1 U	6.0	8.6	1.67	0.2 U	10.7	0.04 U	12.2
		3/27/03	4800-030327-406		0.05 U	6.7	0.05 U	1.4	0.3	0.02 U	0.2 U	3.1	0.02 U	0.6
		12/4/03	4800-031204-417		0.1 U	4.5	0.2	0.6	2.1 N	0.08	0.2 U	12.2	0.04 U	1.5
		1/6/05 ^b	6527-050106-425		0.05 U	4.9	0.04	0.2 U	0.7	0.1	0.2 U	4.5	0.02 U	1.0
		12/15/05	6527-051215-437		50 U	5 U	5 U	5 U	10 U	2 U	0.2 U	20 U	10 U	10 U
Building 4 Area	MW-8	12/19/01	4800-011219-263	X	0.1 U	29.6	0.05 U	4.4	2.0	0.48	0.2 U	3.9	0.02 U	3.5
		3/28/02	4800-020328-274		0.05 U	23.1	0.07	0.8	0.2	0.05	0.2 U	3.7	0.02 U	0.9
		7/3/02	4800-0207-03-290		0.05 U	15.5	0.05 U	0.4	0.4	0.16	0.2 U	3.4	0.02 U	1.0
		10/9/02	4800-021009-304		0.05 U	14.9	0.05 U	0.5	0.4	0.08	0.2 U	3.3	0.02 U	0.7
		10/9/02	4800-021009-305		0.05 U	15.2	0.05 U	0.4	0.5	0.09	0.2 U	3.4	0.02 U	0.8
		3/27/03	4800-030327-407-upper		0.05 U	6.3	0.05 U	2.4	0.5	0.07	0.2 U	7.9	0.02 U	0.8
		3/27/03	4800-030327-408-lower		0.05 U	10.2	0.05 U	0.8	0.3	0.02 U	0.2 U	5.9	0.02 U	0.6
MW-9		12/19/01	4800-011219-262	X	0.2 U	22.3	0.17	10.1	11.4	2.22	0.2 U	10.7	0.04	15.6
		3/28/02	4800-020328-275		0.05 U	20.6	0.05 U	2.7	0.9	0.18	0.2 U	7.4	0.02 U	2.6
		7/3/02	4800-0207-03-291		0.05 U	22.3	0.05 U	4.9	1.9	0.4	0.2 U	10.1	0.02 U	2.1
		10/9/02	4800-021009-306		0.05 U	18.4	0.05 U	1.0	1.4	0.35	0.2 U	4.1	0.02 U	1.9
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261	X	0.2 U	21.7	0.18	13.0	15.6	4.51	0.2 U	12.3	0.06	25.1
		3/28/02	4800-020328-276		0.05 U	9.4	0.05 U	2.2	1.2	0.31	0.2 U	5.5	0.02 U	2.4
		7/3/02	4800-0207-03-292		0.05 U	9.7	0.05 U	0.6	0.7	0.1	0.2 U	2.8	0.02 U	1.1
		10/9/02	4800-021009-307		0.05 U	16.6	0.05 U	0.4	0.4	0.06	0.2 U	1.6	0.02 U	1.0

U = not detected

N = matrix spike was outside control criteria

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b 2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Table 13
Dissolved Metal Concentrations in Groundwater (ug/L) Compared to Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Antimony, Dissolved	Arsenic, Dissolved	Cadmium, Dissolved	Chromium, Dissolved	Copper, Dissolved	Lead, Dissolved	Mercury, Dissolved	Nickel, Dissolved	Silver, Dissolved	Zinc, Dissolved
<i>Human Health Drinking Water PRG^a</i>					15	0.045	18	NC	1,500	NC	11	730	180	11,000
<i>Human Health Drinking Water MCL^a</i>					6	10	5	100	1,300	15	2	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					64	0.014	NC	NC	NC	NC	0.0146	460	NC	2,600
<i>Ecological SLV^a</i>					1,600	150	0.094	74	2.9	0.54	0.77	16	0.12	36.5
BWTP and Building 72 Area	MW-1	10/8/02	4800-021008-296		0.12	5.1	0.06	4.2	5.1	0.87	0.2 U	14.3	0.04	4.8
	MW-2	10/8/02	4800-021008-297		0.21	2.8	0.05 U	1.2	0.2	0.02 U	0.2 U	17.3	0.02 U	0.5 U
	MW-3	10/8/02	4800-021008-298		0.39	7.4	0.06	1.3	0.5	0.02 U	0.2 U	3.5	0.02 U	0.6
		3/26/03	4800-030326-402		0.52	2.4	0.05 U	0.9	0.2	0.03	0.2 U	3.6	0.02 U	17.8
	MW-4	10/8/02	4800-021008-299		0.13	1.5	0.05 U	0.4	0.5	0.02 U	0.2 U	5	0.02 U	0.9
Paint Shed/Blast Booth, Building 73 Area		3/26/03	4800-030326-403-upper		0.27	0.5 U	0.05 U	0.8	0.5	0.02 U	0.2 U	5.1	0.02 U	21.4
		3/26/03	4800-030326-404-upper	X	0.37	0.5 U	0.05 U	1.2	0.5	0.02 U	0.2 U	5	0.02 U	17.4
		3/26/03	4800-030326-405-lower		0.72	1	0.05 U	0.9	0.2	0.02	0.2 U	5.4	0.02 U	2.9
	MW-5	10/8/02	4800-021008-300		0.67	3.1	0.05 U	1	0.9	0.03	0.2 U	2.9	0.02 U	1.5
	MW-6	10/8/02	4800-021008-301		0.13	0.5 U	0.05 U	0.7	0.6	0.02 U	0.2 U	6	0.02 U	0.5 U
Building 4 Area	MW-7	10/9/02	4800-021009-303		0.16	6.6	0.05	1.6	0.6	0.02	0.2 U	5.4	0.02 U	0.6
		3/27/03	4800-030327-406		0.45	6.5	0.05 U	1.2	0.2	0.02 U	0.2 U	3.1	0.02 U	0.7
	MW-8	10/9/02	4800-021009-304		0.05 U	13.8	0.05 U	0.3	0.2	0.02 U	0.2 U	3	0.02 U	0.5 U
		10/9/02	4800-021009-305	X	0.07	13.6	0.05 U	0.4	0.2	0.02 U	0.2 U	3.1	0.02 U	0.5 U
		3/27/03	4800-030327-407-upper		0.76	6.5	0.05 U	0.8	0.4	0.02 U	0.2 U	6.8	0.02 U	0.8
Building 43, 50 and 80 Area		3/27/03	4800-030327-408-lower		0.35	8.1	0.05 U	0.8	0.3	0.02 U	0.2 U	6.1	0.02 U	0.6
	MW-9	10/9/02	4800-021009-306		0.38	18.8	0.05 U	0.8	0.3	0.02 U	0.2 U	3.2	0.02 U	0.5 U
	MW-10	10/9/02	4800-021009-307		0.1	16.6	0.05 U	0.8	0.2	0.02 U	0.2 U	1.4	0.02 U	0.6

U = not detected

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling.

Table 14

Tributyltin Concentrations in Groundwater (ug/L) Compared to Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Tri-n-butyltin
					11
					NC
					NC
					0.063
BWTP and Building 72 Area	MW-1	12/18/01 3/26/02 7/1/02 10/8/02	4800-011218-253 4800-020326-265 4800-020701-281 4800-021008-296		0.42 U 0.02 U 0.02 U 0.02 U
	MW-2	12/18/01 12/18/01 3/26/02 7/1/02 7/1/02 10/8/02	4800-011218-256 4800-011218-256 4800-020326-266 4800-020701-282 4800-020701-282-DUP 4800-021008-297	X X	0.42 U 0.42 U 0.02 U 0.02 U 0.02 U 0.02 U
	MW-3	12/18/01 3/27/02 7/2/02 10/8/02	4800-011218-255 4800-020327-267 4800-020702-283 4800-021008-298		0.42 U 0.02 U 0.02 U 0.02 U
	MW-4	12/18/01 3/27/02 7/2/02 10/8/02	4800-011218-254 4800-020327-268 4800-020702-284 4800-021008-299		0.42 U 0.02 U 0.02 U 0.02 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01 3/27/02 7/2/02 10/8/02	4800-011218-257 4800-020327-269 4800-020702-285 4800-021008-300		0.42 U 0.02 U 0.02 U 0.02 U
	MW-6	12/18/01 3/27/02 7/2/02 10/8/02	4800-011218-258 4800-020327-270 4800-020702-286 4800-021008-301		0.42 U 0.02 U 0.02 U 0.02 U
	MW-7	12/18/01 3/28/02 3/28/02 7/2/02 10/9/02	4800-011218-259 4800-020328-272 4800-020328-273 4800-020702-287 4800-021009-303	X	0.42 U 0.02 U 0.02 U 0.02 U 0.02 U

Table 14
Tributyltin Concentrations in Groundwater (ug/L) Compared to Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Tri-n-butyltin
<i>Human Health Drinking Water PRG^a</i>					11
<i>Human Health Drinking Water MCL^a</i>					NC
<i>Human Health Fish Consumption SLV^a</i>					NC
<i>Ecological SLV^a</i>					0.063
Building 4 Area	MW-8	12/19/01 3/28/02 7/3/02 10/9/02 10/9/02	4800-011219-263 4800-020328-274 4800-0207-03-290 4800-021009-304 4800-021009-305	X	0.42 U 0.02 U 0.02 U 0.02 U 0.02 U
	MW-9	12/19/01 3/28/02 7/3/02 10/9/02	4800-011219-262 4800-020328-275 4800-0207-03-291 4800-021009-306		0.42 U 0.02 U 0.02 U 0.02 U
Building 43, 50 and 80 Area	MW-10	12/19/01 3/28/02 7/3/02 10/9/02	4800-011219-261 4800-020328-276 4800-0207-03-292 4800-021009-307		0.42 U 0.02 U 0.02 U 0.02 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b 2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling.

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Dichlorodifluoromethane (CFC 12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorodifluoromethane (CFC 11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Carbon Disulfide	Dichloromethane (Methylene Chloride)	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)
<i>Human Health Drinking Water PRG^a</i>					390	160	0.02	8.7	4.6	NC	5,500	NC	1,000	4.3	NC	810
<i>Human Health Drinking Water MCL^a</i>					NC	NC	2	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					NC	NC	0.24	NC	NC	NC	NC	NC	NC	59	NC	NC
<i>Ecological SLV^a</i>					NC	NC	NC	NC	NC	NC	1,500	NC	0.92	2,200	NC	47
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/26/02	4800-020326-265		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/1/02	4800-020701-281		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/8/02	4800-021008-296		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/26/02	4800-020326-266		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/1/02	4800-020701-282		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/8/02	4800-021008-297		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.2 J
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/27/02	4800-020327-267		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/2/02	4800-020702-283		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/8/02	4800-021008-298		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-4	12/18/01	4800-011218-254		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/27/02	4800-020327-268		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	1.2	0.5 U	2 U	0.5 U	0.64
		7/2/02	4800-020702-284		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.65	0.5 U	2 U	0.5 U	0.5 U
		10/8/02	4800-021008-299		0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.5 U	20 U	1.1	0.5 U	2 U	0.26 J	0.63
		3/26/03	4800-030326-403-upper		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.65	0.5 U	2 U	0.5 U	0.5 U
		3/26/03	4800-030326-404-upper	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.61	0.5 U	2 U	0.5 U	0.5 U
		3/26/03	4800-030326-405-lower		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	1.0	0.5 U	2 U	0.5 U	0.5 U
		12/3/03	4800-031203-415		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.54	0.5 U	2 U	0.5 U	0.5 U
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.57	1.4	2 U	0.5 U	0.5 U
		1/5/05 ^e	6527-0501-05-423		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		1/5/05 ^e	6527-0501-05-423	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		12/14/05	6527-051214-435		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/27/02	4800-020327-269		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/2/02	4800-020702-285		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/8/02	4800-021008-300		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/27/02	4800-020327-270		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/2/02	4800-020702-286		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/28/02	4800-020328-272		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/2/02	4800-020702-287		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/9/02	4800-021009-303		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Dichlorodifluoromethane (CFC 12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorodifluoromethane (CFC 11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Carbon Disulfide	Dichloromethane (Methylene Chloride)	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)
<i>Human Health Drinking Water PRG^a</i>					390	160	0.02	8.7	4.6	NC	5,500	NC	1,000	4.3	NC	810
<i>Human Health Drinking Water MCL^a</i>					NC	NC	2	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					NC	NC	0.24	NC	NC	NC	NC	NC	NC	59	NC	NC
<i>Ecological SLV^a</i>					NC	NC	NC	NC	NC	NC	1,500	NC	0.92	2,200	NC	47
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/28/02	4800-020328-274		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/9/02	4800-021009-304		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/9/02	4800-021009-305	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	0.5 U	0.5 U	0.85	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	0.5 U	0.5 U	0.88	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	0.5 U	0.5 U	0.91	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	0.5 U	0.5 U	0.45 J	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/9/02	4800-021009-307		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	2-Butanone (MEK)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene
<i>Human Health Drinking Water PRG^a</i>					7,000	NC	61	0.17	NC	3,200	NC	0.17	0.12	0.35
<i>Human Health Drinking Water MCL^a</i>					NC	NC	70	NC	NC	200	NC	5	5	5
<i>Human Health Fish Consumption SLV^a</i>					NC	NC	NC	47	NC	NC	NC	0.16	3.7	5.1
<i>Ecological SLV^a</i>					14,000	NC	NC	1,240	NC	11	NC	9.8	20,000	130
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/02	4800-020326-265		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/1/02	4800-020701-281		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-296		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-2	12/18/01	4800-011218-256		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/18/01	4800-011218-256	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/02	4800-020326-266		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/1/02	4800-020701-282		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/1/02	4800-020701-282-DUP	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-297		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-3	12/18/01	4800-011218-255		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-267		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-283		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-298		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-4	12/18/01	4800-011218-254		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-268		20 U	0.5 U	1.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-284		20 U	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-299		20 U	0.5 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J
		3/26/03	4800-030326-403-upper		20 U	0.5 U	0.79	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/03	4800-030326-404-upper	X	20 U	0.5 U	0.79	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/03	4800-030326-405-lower		20 U	0.5 U	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/3/03	4800-031203-415		20 U	0.5 U	0.93	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/3/03	4800-031203-415	X	20 U	0.5 U	0.98	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1/5/05 ^e	6527-0501-05-423		20 U	0.5 U	0.63	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1/5/05 ^e	6527-0501-05-423	X	20 U	0.5 U	0.64	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-5	12/14/05	6527-051214-435		20 U	0.5 U	0.51	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/14/05	6527-051214-435	X	20 U	0.5 U	0.50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-269		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-285		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-300		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-6	12/18/01	4800-011218-258		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-270		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-286		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-301		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-7	12/18/01	4800-011218-259		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-272		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-273	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-287		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-303		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.12 J

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	2-Butanone (MEK)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene
<i>Human Health Drinking Water PRG^a</i>					7,000	NC	61	0.17	NC	3,200	NC	0.17	0.12	0.35
<i>Human Health Drinking Water MCL^a</i>					NC	NC	70	NC	NC	200	NC	5	5	5
<i>Human Health Fish Consumption SLV^a</i>					NC	NC	NC	47	NC	NC	NC	0.16	3.7	5.1
<i>Ecological SLV^a</i>					14,000	NC	NC	1,240	NC	11	NC	9.8	20,000	130
Building 4 Area	MW-8	12/19/01	4800-011219-263		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-274	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-290		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-304		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-305		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-9	12/19/01	4800-011219-262		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.3	0.5 U
		3/28/02	4800-020328-275		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.7	0.5 U
		7/3/02	4800-0207-03-291		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.5	0.5 U
		10/9/02	4800-021009-306		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.1	0.5 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-276		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-292		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-307		20 U	0.5 U	0.18 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Trichloroethene (TCE)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane	2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MIBK)	1,3-Dichloropropane
<i>Human Health Drinking Water PRG^a</i>					0.028	0.16	0.18	NC	NC	NC	720	NC	0.2	NC	NC
<i>Human Health Drinking Water MCL^a</i>					5	5	NC	NC	NC	NC	1,000	NC	5	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					3	1.5	NC	NC	NC	NC	1,500	NC	1.6	NC	NC
<i>Ecological SLV^a</i>					21,900	NC	NC	NC	99	0.055	9.8	NC	9,400	170	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/02	4800-020326-265		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/1/02	4800-020701-281		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-296		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
	MW-2	12/18/01	4800-011218-256	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/18/01	4800-011218-256		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/02	4800-020326-266		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/1/02	4800-020701-282		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-297		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-267		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-283		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-298		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
	MW-4	12/18/01	4800-011218-254		270	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-268		160	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-284		91	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-299		120	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/03	4800-030326-403-upper	X	53 D	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/03	4800-030326-404-upper		53 D	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/03	4800-030326-405-lower		82 D	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/3/03	4800-031203-415		54	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/3/03	4800-031203-415	X	56	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		1/5/05 ^e	6527-0501-05-423		31	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		1/5/05 ^e	6527-0501-05-423	X	30	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/14/05	6527-051214-435		15	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/14/05	6527-051214-435	X	15	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-269		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-285		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-300		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.29 J	0.5 U	0.5 U	0.5 U	
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-270		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-286		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-301		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-272		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-287		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/9/02	4800-021009-303		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.44 J	0.5 U	0.5 U	20 U	0.5 U

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Trichloroethene (TCE)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane	2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MBK)	1,3-Dichloropropane
<i>Human Health Drinking Water PRG^a</i>					0.028	0.16	0.18	NC	NC	NC	720	NC	0.2	NC	NC
<i>Human Health Drinking Water MCL^a</i>					5	5	NC	NC	NC	NC	1,000	NC	5	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					3	1.5	NC	NC	NC	NC	1,500	NC	1.6	NC	NC
<i>Ecological SLV^a</i>					21,900	NC	NC	NC	99	0.055	9.8	NC	9,400	170	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		3/28/02	4800-020328-274	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		10/9/02	4800-021009-304		0.12 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.13 J	0.5 U	0.5 U	20 U	0.5 U
		10/9/02	4800-021009-305		0.12 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.12 J	0.5 U	0.5 U	20 U	0.5 U
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U
		10/9/02	4800-021009-307		0.14 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Tetrachloroethene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Styrene	Bromoform	Isopropylbenzene
<i>Human Health Drinking Water PRG^a</i>					0.1	NC	0.0056	110	0.43	1,300	NC	NC	1,600	8.5	NC
<i>Human Health Drinking Water MCL^a</i>					5	NC	NC	100	NC	700	10,000	10,000	100	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					0.33	NC	NC	160	NC	210	NC	NC	NC	14	NC
<i>Ecological SLV^a</i>					840	NC	NC	50	NC	7.3	1.8	13	NC	NC	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/02	4800-020326-265		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/1/02	4800-020701-281		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-296		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-2	12/18/01	4800-011218-256	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/02	4800-020326-266	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/1/02	4800-020701-282	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-297	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-267		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-283		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-298		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-4	12/18/01	4800-011218-254		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-268		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-284		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-299		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/03	4800-030326-403-upper	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/03	4800-030326-404-upper	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/03	4800-030326-405-lower	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		1/5/05 ^e	6527-0501-05-423	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		1/5/05 ^e	6527-0501-05-423	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-269		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-285		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-300		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-270		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-286		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-301		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-7	12/18/01	4800-011218-259	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-272	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-287	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-303	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.39 J	0.09 J	0.5 U	0.5 U

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Tetrachloroethene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Styrene	Bromoform	Isopropylbenzene
<i>Human Health Drinking Water PRG^a</i>					0.1	NC	0.0056	110	0.43	1,300	NC	NC	1,600	8.5	NC
<i>Human Health Drinking Water MCL^a</i>					5	NC	NC	100	NC	700	10,000	10,000	100	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					0.33	NC	NC	160	NC	210	NC	NC	NC	14	NC
<i>Ecological SLV^a</i>					840	NC	NC	50	NC	7.3	1.8	13	NC	NC	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-274	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-304		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-305		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/3/02	4800-0207-03-292		0.78	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-307		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropene	Bromobenzene	n-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	1,3-Dichlorobenzene
<i>Human Health Drinking Water PRG^a</i>					0.055	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Human Health Drinking Water MCL^a</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					0.4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Ecological SLV^a</i>					2,400	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/02	4800-020326-265		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/1/02	4800-020701-281		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-296		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/02	4800-020326-266		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/1/02	4800-020701-282		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-297		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-267		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-283		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-298		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-4	12/18/01	4800-011218-254		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-268		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-284		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-299		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/03	4800-030326-403-upper		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/03	4800-030326-404-upper	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/03	4800-030326-405-lower		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/3/03	4800-031203-415		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		1/5/05 ^e	6527-0501-05-423		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		1/5/05 ^e	6527-0501-05-423	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-5	12/14/05	6527-051214-435		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-269		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-285		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-300		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-270		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-286		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-301		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-272		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-287		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-303		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropene	Bromobenzene	n-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	1,3-Dichlorobenzene
<i>Human Health Drinking Water PRG^a</i>					0.055	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Human Health Drinking Water MCL^a</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Human Health Fish Consumption SLV^a</i>					0.4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Ecological SLV^a</i>					2,400	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-274	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-304		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-305		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-307		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	4-Isoamyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	Naphthalene	Hexachlorobutadiene
<i>Human Health Drinking Water PRG^a</i>					NC	NC	NC	NC	NC	NC	NC	6.2	NC
<i>Human Health Drinking Water MCL^a</i>					NC	NC	NC	NC	NC	NC	NC	0.2	NC
<i>Human Health Fish Consumption SLV^a</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Ecological SLV^a</i>					NC	NC	NC	NC	NC	NC	NC	620	9.3
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/26/02	4800-020326-265		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/1/02	4800-020701-281		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/8/02	4800-021008-296		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-2	12/18/01	4800-011218-256		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		12/18/01	4800-011218-256	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/26/02	4800-020326-266		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/1/02	4800-020701-282		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/1/02	4800-020701-282-DUP	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/8/02	4800-021008-297		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-3	12/18/01	4800-011218-255		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/27/02	4800-020327-267		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/2/02	4800-020702-283		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/8/02	4800-021008-298		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-4	12/18/01	4800-011218-254		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/27/02	4800-020327-268		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/2/02	4800-020702-284		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/8/02	4800-021008-299		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/26/03	4800-030326-403-upper		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/26/03	4800-030326-404-upper	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/26/03	4800-030326-405-lower		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		12/3/03	4800-031203-415		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		12/3/03	4800-031203-415	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		1/5/05 ^e	6527-0501-05-423		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		1/5/05 ^e	6527-0501-05-423	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		12/14/05	6527-051214-435		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		12/14/05	6527-051214-435	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/27/02	4800-020327-269		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/2/02	4800-020702-285		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/8/02	4800-021008-300		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-6	12/18/01	4800-011218-258		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/27/02	4800-020327-270		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/2/02	4800-020702-286		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/8/02	4800-021008-301		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-7	12/18/01	4800-011218-259		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-272		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-273	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/2/02	4800-020702-287		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-303		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U

Table 15
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L) Compared to
Water Screening Levels
SIUF OU1 Phase II RI Work Plan Addendum

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	Naphthalene	Hexachlorobutadiene
<i>Human Health Drinking Water PRG^a</i>					NC	NC	NC	NC	NC	NC	NC	6.2	NC
<i>Human Health Drinking Water MCL^a</i>					NC	NC	NC	NC	NC	NC	NC	0.2	NC
<i>Human Health Fish Consumption SLV^a</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Ecological SLV^a</i>					NC	NC	NC	NC	NC	NC	NC	620	9.3
Building 4 Area	MW-8	12/19/01	4800-011219-263		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-274		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/3/02	4800-0207-03-290		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-304		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-305	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-9	12/19/01	4800-011219-262		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-275		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/3/02	4800-0207-03-291		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-306		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-10	12/19/01	4800-011219-261		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-276		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/3/02	4800-0207-03-292		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-307		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aTable 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds human health drinking water or fish consumption SLV.

Box indicates result exceeds ecological SLV.

Yellow shading indicates samples collected prior to implementing low-flow sampling

Table 17
Metal Concentrations in Soil (ug/kg) Compared to PRGs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Cadmium	Chromium ^d	Copper	Lead	Mercury	Nickel	Silver	Zinc	Barium	Selenium
<i>Industrial Soil PRG^a</i>				410	1.6	450	450	41,000	800	310	NC	5,100	100,000	67,000	5,100
<i>Soil SLV^b</i>				5	10	4	1	100	50	0.3	30	2	50	500	1
<i>Plants</i>				NC	60	20	0.4	50	500	0.1	200	50	200	3,000	70
<i>Invertibrates</i>				4	7	1	42	36	17	0.07	38	1	86	NC	2
<i>Background^c</i>															
Former Hazardous Waste															
Storage Area	4800-010129-039	B-48	2	10.7 U	3.5	1.1 U	23.8	18.5	6.5	0.03	21	2.1 U	53	NA	NA
	4800-010129-040	B-48	29	10.7 U	3.1	1.1 U	21.9	22.5	5.2	0.03	21.9	2.2 U	55.1	NA	NA
	4800-010129-041	B-49	2	11.3 U	2.8 U	1.1 U	19.3	21.1	3.3	0.08	25.7	2.3 U	57.1	NA	NA
	4800-010129-042	B-49	29	11.8 U	3.1	1.2 U	23.8	24.7	4.4	0.03	27.1	2.4 U	56.1	NA	NA
	4800-010130-043	B-50	2	11.6 U	2.9	1.2 U	24.8	28.9	8.4	0.06	20.8	2.3 U	58.4	NA	NA
	4800-010130-044	B-50	30	10.7 U	3.2	1.1 U	24.3	24.1	4.7	0.02 U	25.8	2.1 U	54.9	NA	NA
	4800-010130-045	B-51	2	11.7 U	3.9	1.2 U	29.7	32.5	8.8	0.05	26.2	2.3 U	66.9	NA	NA
	4800-010130-046	B-51	30	10.3 U	3	1 U	26.6	29.1	5.1	0.03	24.6	2.1 U	57.3	NA	NA
	4800-010131-051	B-29	2	10.9 U	2.1	1.1 U	16.6	16.8	3.4	0.02 U	18.8	2.2 U	51.3	NA	NA
	4800-010201-052	B-29	29	10.6 U	2.1	1.1 U	33.2	30.9	4.2	0.05	29.2	2.1 U	69.7	NA	NA
Building 73	4800-010131-047	B-30	2	11.8 U	2.2	1.2 U	15.9	15.8	3.8	0.02	19.8	2.4 U	45.8	NA	NA
	4800-010131-048	B-30	30	11.6 U	3.1	1.2 U	37.6	31.2	5	0.02	30.3	2.3 U	68.7	NA	NA
	4800-010131-049	B-31	2	12.5 U	5.7	1.5	34.8	90.6	196	0.11	31.4	2.5 U	645	NA	NA
	4800-010131-050	B-31	30	11 U	2.2	1.1 U	26.7	28.9	6.3	0.05	24.8	2.2 U	73.2	NA	NA
	4800-010202-070	B-42	2	11.3 U	2.4	1.1 U	17.3	17.3	3.4	0.02 U	22.4	2.3 U	51.3	NA	NA
Building 43, 50 and 80 Area	4800-010202-071	B-42	10	10.7 U	2.4	1.1 U	15.7	15	2.2	0.04	18	2.2 U	49.3	NA	NA
	4800-010201-053	B-43	2	11.2 U	2.8	1.1 U	18.6	16.9	2.7	0.02 U	20.5	2.2 U	53.7	NA	NA
	4800-010201-054	B-43	29	11.6 U	2.6	1.2 U	15.6	16.3	4.7	0.02 U	17.7	2.3 U	48	NA	NA
	4800-010202-057	B-44	2	11 U	3.2	1.1 U	16.5	16.5	2.6	0.02 U	19.5	2.2 U	50.1	NA	NA
	4800-010202-058	B-44	13	10.8 U	2.1	1.1 U	17.4	15.8	2.1	0.02 U	18.7	2.2 U	51.9	NA	NA
	4800-010201-055	B-45	2	11.3 U	2.9	1.1 U	19.5	38.8	6.1	0.03	21.7	2.3 U	66.8	NA	NA
	4800-010201-056	B-45	29	11.4 U	2.7	1.1 U	29.5	23.9	4.2	0.02 U	28.2	2.3 U	62	NA	NA
	4800-010202-063	B-46	2	11.6 U	2	1.2 U	19.6	17.2	3.5	0.07	22.1	2.3 U	52.4	NA	NA
	4800-010202-065	B-46	13	10.8 U	2.2	1.1 U	16.3	15.2	2.6	0.02 U	18	2.2 U	50.2	NA	NA
	PS-S-14-01	Boring 14	0-2	NA	2.85	0.5 U	13.7	NA	14.6	0.1 U	NA	0.5 U	NA	117	0.5 U
Building 4	PS-S-14-02	Boring 14	16-18	NA	2.02	0.5 U	11.7	NA	5 U	0.1 U	NA	0.5 U	NA	86	0.5 U
	4800-010207-090	B-32	2	11.9 U	2.4	1.2 U	20.7	19.3	3.3	0.02 U	22.2	2.4 U	50	NA	NA
	4800-010207-092	B-32	30	10.5 U	2	1.1 U	16.8	15.3	4	0.03	19.8	2.1 U	47.4	NA	NA
	4800-010206-087	B-33	2	10.9 U	2.7	1.1 U	26.7	27.7	6.7	0.03	24.2	2.2 U	62.6	NA	NA
	4800-010206-089	B-33	30	11.3 U	3.3	1.1 U	27.7	24.7	4.9	0.03	26.5	2.3 U	62.2	NA	NA
	4800-010206-084	B-34	7	11.3 U	2.6	1.1 U	18.6	16.8	4.2	0.02 U	22.6	2.3 U	54.3	NA	NA
	4800-010206-085	B-34	14	11.2 U	2.2	1.1 U	14.6	15	3.9	0.02 U	17.8	2.2 U	46	NA	NA
Building 58	4800-010207-094	B-35	24.5	11.4 U	3.6	1.1 U	39.5	48.4	19.8	0.12	32.6	2.3 U	91.5	NA	NA
	4800-010208-098	B-47	2	11.1 U	2.7	1.1 U	31.4	45.6	9.5	0.07	20.4	2.2 U	72.9	NA	NA
	4800-010208-099	B-47	29	11.3 U	3.4	1.1 U	37.5	33.5	5.9	0.05	29.6	2.3 U	68.5	NA	NA

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Metal Concentrations in Soil (ug/kg) Compared to PRGs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Cadmium	Chromium ^d	Copper	Lead	Mercury	Nickel	Silver	Zinc	Barium	Selenium
<i>Industrial Soil PRG^a</i>				410	1.6	450	450	41,000	800	310	NC	5,100	100,000	67,000	5,100
<i>Soil SLV^b</i>				5	10	4	1	100	50	0.3	30	2	50	500	1
<i>Plants</i>				NC	60	20	0.4	50	500	0.1	200	50	200	3,000	70
<i>Invertibrates</i>				4	7	1	42	36	17	0.07	38	1	86	NC	2
<i>Background^c</i>															
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	11.3 U	3.9	1.1 U	20.9	19	3.8	0.04	23.5	2.3 U	53.3	NA	NA
	4800-010219-151	B-37	30	10.2 U	3.3	1 U	35.4	31.9	3.7	0.03	31.9	2 U	71.6	NA	NA
	4800-010215-133	B-38	2	10.7 U	1.7	1.1 U	15.1	16.7	2.7	0.02 U	20.4	2.1 U	49.3	NA	NA
	4800-010215-134	B-38	30	11.6 U	3.3	1.2 U	35	32.1	5.6	0.07	28.9	2.3 U	67.3	NA	NA
	4800-010215-135	B-39	2	11.9 U	2.3	1.2 U	29.6	28.5	5	0.04	29	2.4 U	71.4	NA	NA
	4800-010215-136	B-39	10	10.9 U	2.4	1.1 U	15.6	15.2	3.1	0.02 U	19.8	2.2 U	51.2	NA	NA
	4800-010215-139	B-40	2	10.8 U	1.6	1.1 U	13.7	15.3	2	0.02 U	17	2.2 U	48	NA	NA
	4800-010215-140	B-40	10	10.9 U	2.1	1.1 U	14.3	14.7	2.5	0.02 U	17.7	2.2 U	50	NA	NA
	4800-010219-153	B-41	2	11.8 U	2.7	1.2 U	19.2	18.6	2.4	0.02 U	23.5	2.4 U	65.2	NA	NA
	4800-010219-154	B-41	27	11.6 U	3.4	1.2 U	33.5	30.6	4.5	0.04	31.5	2.3 U	67.7	NA	NA
	PS-S-10-01	Boring 10	0-2	NA	3.46	0.5 U	20.9	NA	7.14	0.1 U	NA	0.5 U	NA	254	0.775
	PS-S-10-02	Boring 10	16-18	NA	3.6	0.5 U	25.3	NA	9.67	0.1 U	NA	0.5 U	NA	217	0.5 U
	PS-S-11-01	Boring 11	0-2	NA	3.65	0.5 U	25.1	NA	8.99	0.1 U	NA	0.5 U	NA	187	0.715
	PS-S-11-02	Boring 11	16-18	NA	2.48	0.5 U	15.9	NA	5 U	0.1 U	NA	0.5 U	NA	163	0.5 U
	PS-S-12-01	Boring 12	0-2	NA	2.92	0.5 U	15.9	NA	5.66	0.1 U	NA	0.5 U	NA	130	0.5 U
	PS-S-12-02	Boring 12	16-18	NA	2.19	0.5 U	13.9	NA	5 U	0.1 U	NA	0.5 U	NA	109	0.5 U
	PS-S-13-01	Boring 13	0-2	NA	3.67	0.5 U	14.8	NA	6.47	0.1 U	NA	0.5 U	NA	152	0.5 U
	PS-S-13-02	Boring 13	16-18	NA	2.14	0.5 U	10.6	NA	5 U	0.1 U	NA	0.5 U	NA	88.8	0.5 U
	PS-S-15-01	Boring 15	0-3	NA	1.57	0.5 U	8.1	NA	18.1	0.1 U	NA	0.5 U	NA	55.6	0.5 U
	PS-S-15-02	Boring 15	16-18	NA	1.19	0.5 U	7.51	NA	5 U	0.1 U	NA	0.5 U	NA	77.3	0.5 U
Electrical Substations	PS-S-08-01	Boring 8	0-2	NA	2.13	0.5 U	11.9	NA	5 U	0.1 U	NA	0.5 U	NA	88.3	0.5 U
Berth 313	PS-S-08-02	Boring 8	16-18	NA	2.52	0.5 U	12.4	NA	5 U	0.1 U	NA	0.5 U	NA	94.2	0.5 U
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	NA	2.67	0.5 U	13.5	NA	5 U	0.1 U	NA	0.5 U	NA	120	0.5 U
	PS-S-16-02	Boring 16	16-18	NA	1.88	0.5 U	10.2	NA	5 U	0.1 U	NA	0.5 U	NA	87.8	0.5 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^c DEQ Default soil background concentrations for metals, October 28, 2002.

^d SLV for Chromium III; PRG and background concentration for total chromium.

NA = not analyzed

NC = no screening or hot spot level

Shading indicates sampling result exceeds estimated background concentration and PRG.

Box indicates result exceeds estimated background concentration and SLV.

Dashed box indicates result exceeds hot spot level.

Table 18
Polychlorinated Biphenyl (PCB) Concentrations in Soil (ug/kg) Compared to PRGs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs ^c
<i>Industrial Soil PRG^a</i>				21,000	740	740	740	740	740	740	740	740	NC
<i>Soil SLV^b</i>				NC 100,000	NC NC	NC NC	1,500 5,000	NC NC	700 4,000	NC NC	NC NC	NC NC	NC
<i>Birds</i>													
<i>Mammals</i>													
Former Hazardous Waste Storage Area													
4800-010129-039	B-48	2		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010129-040	B-48	29		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010129-041	B-49	2		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010129-042	B-49	29		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010130-043	B-50	2		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010130-044	B-50	30		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010130-045	B-51	2		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010130-046	B-51	30		0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	0.1
4800-010201-052	B-29	29		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-070	B-42	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-071	B-42	10		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010201-053	B-43	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010201-054	B-43	29		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
Building 73													
4800-010202-057	B-44	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-058	B-44	13		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010201-055	B-45	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010201-056	B-45	29		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-063	B-46	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-065	B-46	13		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
PS-S-14-01	Boring 14	0-2		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-14-02	Boring 14	16-18		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
Building 43, 50 and 80 Area													
4800-010202-057	B-44	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-058	B-44	13		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010201-055	B-45	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010201-056	B-45	29		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-063	B-46	2		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010202-065	B-46	13		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
PS-S-14-01	Boring 14	0-2		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-14-02	Boring 14	16-18		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
Paint Shed/Blast Booth Area													
PS-S-10-01	Boring 10	0-2		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PS-S-10-02	Boring 10	16-18		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PS-S-11-01	Boring 11	0-2		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-11-02	Boring 11	16-18		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-12-01	Boring 12	0-2		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-12-02	Boring 12	16-18		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-13-01	Boring 13	0-2		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
PS-S-13-02	Boring 13	16-18		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50
Electrical Substations													
4800-010226-155	S-7	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-156	S-8	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-157	S-9	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-158	S-10	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	35	10	NA	45
4800-010226-159	S-11	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-160	S-12	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	18	12	NA	30
4800-010226-161	S-13	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-162	S-14	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-163	S-15	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-164	S-16	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10
4800-010226-165	S-17	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	89	NA	94
4800-010226-166	S-18	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	10 U	NA	NA	10

Table 18
Polychlorinated Biphenyl (PCB) Concentrations in Soil (ug/kg) Compared to PRGs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^c Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit for samples with concentrations reported as not detected.

NA = not analyzed

NA = not analyzed

NC = no screening level
Shading indicates sampling result exceeds PRG.

Shading indicates sampling result
Box indicates result exceeds SI V

Table 19
Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg) Compared to RBCs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Hydrocarbon Identification (HCID) Results			NWTPH Results	418.1 Results
				Gasoline Range Organics	Diesel Range Organics	Residual Range Organics		
Risk-Based Concentration^a								
<i>Soil Ing., Dermal Contact, Inhalation</i>								
Occupational								
Construction Worker							22,000	70,000
Excavation Worker							13,000	23,000
Vol. to Outdoor Air - Occupational							120,000	130,000
Vapor Intr. Into Buildings - Occupational							80,000	130,000
Leaching to Groundwater - Occupational							120,000	130,000
							110	130,000
Former Hazardous Waste								
Storage Area	4800-010129-039	B-48	2	30 U	75 U	150 U		
	4800-010129-040	B-48	29	26 U	64 U	130 U		
	4800-010129-041	B-49	2	27 U	68 U	140 U		
	4800-010129-042	B-49	29	28 U	70 U	140 U		
	4800-010130-043	B-50	2	31 U	76 U	150 U		
	4800-010130-044	B-50	30	25 U	64 U	130 U		
	4800-010130-045	B-51	2	28 U	69 U	140 U		
	4800-010130-046	B-51	30	29 U	71 U	140 U		
Building 73	4800-010131-051	B-29	2	21 U	53 U	110 U		
	4800-010201-052	B-29	29	30 U	74 U	150 U		
	4800-010131-047	B-30	2	24 U	59 U	120 U		
	4800-010131-048	B-30	30	28 U	69 U	140 U		
	4800-010131-049	B-31	2	25 U	62 U	120 U		
	4800-010131-050	B-31	30	30 U	76 U	150 U		
Building 43, 50 and 80 Area	4800-010202-070	B-42	2		55 U	110 U		
	4800-010202-071	B-42	10		53 U	110 U		
	4800-010202-074	B-42	30		63 U	130 U		
	4800-010201-053	B-43	2	22 U	56 U	110 U		
	4800-010201-054	B-43	29	23 U	58 U	120 U		
	4800-010202-057	B-44	2		53 U	110 U		
	4800-010202-058	B-44	13		53 U	110 U		
	4800-010202-062	B-44	30		65 U	130 U		
	4800-010201-055	B-45	2	22 U	55 U	110 U		
	4800-010201-056	B-45	29	55 U	140 U	270 U		
	4800-010202-063	B-46	2		56 U	110 U		
	4800-010202-065	B-46	13		51 U	100 U		
	4800-010202-069	B-46	30		84 U	170 U		
	PS-S-14-01	Boring 14	0-2				558	
	PS-S-14-02	Boring 14	16-18				100 U	

Table 19
Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg) Compared to RBCs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Hydrocarbon Identification (HCID) Results			NWTPH Results			418.1 Results				
				Gasoline Range Organics	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics	Diesel Range Organics	Residual Range Organics					
Risk-Based Concentration^a														
<i>Soil Ing., Dermal Contact, Inhalation</i>														
<i>Occupational</i>														
<i>Construction Worker</i>														
<i>Excavation Worker</i>														
<i>Vol. to Outdoor Air - Occupational</i>														
<i>Vapor Intr. Into Buildings - Occupational</i>														
<i>Leaching to Groundwater - Occupational</i>														
Building 4	4800-010207-090	B-32	2	24 U	60 U	120 U								
	4800-010207-092	B-32	30	26 U	64 U	130 U								
	4800-010206-087	B-33	2	26 U	66 U	130 U								
	4800-010206-089	B-33	30	27 U	66 U	130 U								
	4800-010206-084	B-34	7	23 U	56 U	110 U								
	4800-010206-085	B-34	14	22 U	55 U	110 U								
	4800-010207-094	B-35	24.5	33 U	81 U	160 U								
Building 58	4800-010208-098	B-47	2	27 U	68 U	140 U								
	4800-010208-099	B-47	29	28 U	69 U	140 U								
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	23 U	57 U	110 U								
	4800-010219-151	B-37	30	29 U	73 U	150 U								
	4800-010215-133	B-38	2	DET	DET		330	2,100						
	4800-010215-134	B-38	30		50 U	100 U								
	4800-010215-135	B-39	2		50 U	100 U								
	4800-010215-136	B-39	10		50 U	100 U								
	4800-010215-139	B-40	2		50 U	100 U	27 U	110 U						
	4800-010215-140	B-40	10		50 U	100 U								
	4800-010215-142	B-40	18		50 U	100 U	31 U	120 U						
	4800-010219-153	B-41	2	29 U	71 U	140 U								
	4800-010219-154	B-41	27	54 U	140 U	270 U								
	PS-S-10-01	Boring 10	0-2						644					
	PS-S-10-02	Boring 10	16-18						100 U					
	PS-S-11-01	Boring 11	0-2						365					
	PS-S-11-02	Boring 11	16-18						100 U					
	PS-S-12-01	Boring 12	0-2						180					
	PS-S-12-02	Boring 12	16-18						100 U					
	PS-S-13-01	Boring 13	0-2						198					
	PS-S-13-02	Boring 13	16-18						100 U					

Table 19
Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg) Compared to RBCs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Hydrocarbon Identification (HCID) Results			NWTPH Results		418.1 Results
				Gasoline Range Organics	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics	Diesel Range Organics	
Risk-Based Concentration^a									
<i>Soil Ing., Dermal Contact, Inhalation</i>							22,000	70,000	
<i>Occupational</i>							13,000	23,000	
<i>Construction Worker</i>							120,000	130,000	
<i>Excavation Worker</i>							80,000	130,000	
<i>Vol. to Outdoor Air - Occupational</i>							120,000	130,000	
<i>Vapor Intr. Into Buildings - Occupational</i>							110	130,000	
<i>Leaching to Groundwater - Occupational</i>									
Electrical Substations^b									
4800-010226-155	S-7	0.5-1	20 U	50 U	DET		57	450	
4800-010226-156	S-8	0.5-1	20 U	50 U	DET		27	150	
4800-010226-157	S-9	0.5-1	20 U	50 U	DET		26	270	
4800-010226-158	S-10	0.5-1	20 U	D	DET		54	400	
4800-010226-159	S-11	0.5-1	20 U	50 U	DET		29	210	
4800-010226-160	S-12	0.5-1	20 U	50 U	DET		27	280	
4800-010226-161	S-13	0.5-1	20 U	50 U	DET		26	480	
4800-010226-162	S-14	0.5-1	20 U	50 U	DET		27	330	
4800-010226-163	S-15	0.5-1	20 U	DET	DET		110	440	
4800-010226-164	S-16	0.5-1	20 U	DET	DET		220	1,300	
4800-010226-165	S-17	0.5-1	100 U	250 U	DET		250	1,700	
4800-010226-166	S-18	0.5-1	20 U	DET	DET		130	710	
4800-010226-167	S-19	0.5-1	20 U	50 U	DET		26	230	
4800-010226-168	S-20	0.5-1	20 U	50 U	DET		27	220	
4800-010226-169	S-21	0.5-1	20 U	50 U	DET		27	160	
4800-010226-170	S-22	0.5-1	20 U	50 U	DET		55	380	
4800-010226-171	S-23	0.5-1	20 U	50 U	100 U				
4800-010226-172	S-24	0.5-1	20 U	50 U	100 U				
4800-010226-173	S-25	0.5-1	20 U	50 U	DET		29	120	
4800-010226-174	S-26	0.5-1	20 U	50 U	DET		27	160	
4800-010226-175	S-27	0.5-1	20 U	50 U	100 U		26	110	
4800-010226-176	S-28	0.5-1	20 U	50 U	100 U				
4800-010226-177	S-29	0.5-1	20 U	50 U	DET		26	180	
4800-010226-178	S-30	0.25-0.5	20 U	50 U	DET		27	140	
4800-010226-179	S-31	0.25-0.5	20 U	50 U	100 U				
4800-010226-180	S-32	0.25-0.5	20 U	50 U	100 U				
4800-010226-181	S-33	0.25-0.5	20 U	50 U	DET		25 U	200	
4800-010226-182	S-34	0.25-0.5	20 U	DET	DET		60	240	

Table 19
Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg) Compared to RBCs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Hydrocarbon Identification (HCID) Results			NWTPH Results			418.1 Results
				Gasoline Range Organics	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics	Diesel Range Organics	Residual Range Organics	
Risk-Based Concentration^a										
							22,000	70,000		
<i>Soil Ing., Dermal Contact, Inhalation</i>										
Occupational							13,000	23,000		
Construction Worker							120,000	130,000		
Excavation Worker							80,000	130,000		
Vol. to Outdoor Air - Occupational							120,000	130,000		
Vapor Intr. Into Buildings - Occupational							110	130,000		
Leaching to Groundwater - Occupational										
Berth 313	4800-010226-183	S-35	0.25-0.5	20 U	50 U	100 U				
	4800-010226-184	S-36	0.25-0.5	20 U	50 U	DET				
	4800-010226-185	S-37	0.25-0.5	20 U	50 U	100 U				
	4800-010226-186	S-38	0.25-0.5	20 U	50 U	100 U				
	4800-010226-187	S-39	0.25-0.5	20 U	50 U	DET				
	4800-010226-188	S-40	0.25-0.5	20 U	50 U	100 U				
	4800-010226-189	S-41	0.25-0.5	20 U	50 U	100 U				
	4800-010226-190	S-42	0.25-0.5	20 U	50 U	100 U				
	4800-010226-191	S-43	0.25-0.5	20 U	50 U	100 U				
	4800-010226-192	S-44	0.25-0.5	20 U	50 U	100 U				
	4800-010226-193	S-45	0.25-0.5	20 U	50 U	100 U				
	4800-010226-194	S-46	0.25-0.5	20 U	50 U	100 U				
	4800-010226-195	S-47	0.25-0.5	20 U	50 U	100 U				
	PS-S-15-01	Boring 15	0-3						100 U	
	PS-S-15-02	Boring 15	16-18						100 U	
Berths 304 and 305	PS-S-08-01	Boring 8	0-2						100 U	
	PS-S-08-02	Boring 8	16-18						100 U	
	PS-S-16-01	Boring 16	0-2						100 U	
	PS-S-16-02	Boring 16	16-18						100 U	

^a DEQ, Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^b Diesel and residual range organics concentrations compared to DEQ RBCs for mineral oil. All mineral oil RBCs are 130,000 mg/kg, except for construction worker exposure through soil ingestion, dermal contact and inhalation which has an RBC of 40,000 mg/kg.

U = not detected

DET = detected

Table 20
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
Industrial Soil PRG^a				190,000	NC	NC	29,000,000	1,600,000	26,000,000	NC	100,000,000	22,000,000	29,000,000
Risk-Based Concentration (RBC)^b													
<i>Soil Ing., Dermal Contact, Inhalation</i>													
<i>Occupational</i>				770,000	NC	NC	41,000,000	NC	35,000,000	NC	270,000,000	29,000,000	21,000,000
<i>Construction Worker</i>				710,000	NC	NC	16,000,000	NC	12,000,000	NC	90,000,000	8,900,000	6,700,000
<i>Excavation Worker</i>				20,000,000	NC	NC	450,000,000	NC	330,000,000	NC	3.E+09	250,000,000	190,000,000
<i>Vol. to Outdoor Air - Occupational</i>				940,000	NC	NC	700,000,000	NC	4.E+09	NC	7.E+10	1.E+11	2.E+11
<i>Vapor Intr. Into Buildings - Occupational</i>				3,400,000	NC	NC	3.E+09	NC	1.E+10	NC	2.E+11	5.E+11	6.E+11
<i>Leaching to Groundwater - Occupational</i>				15,000	NC	NC	2,200,000	NC	4,000,000	NC	65,000,000	190,000,000	140,000,000
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Birds</i>				3,900,000	NC	NC	NC	2	NC	NC	NC	NC	NC
<i>Mammals</i>													
Industrial Hot Spot Level^a													
Former Hazardous Waste Storage													
Area	4800-010129-039	B-48	2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010129-040	B-48	29	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	14	16
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	9.7	6.8 U	12	22
	4800-010130-044	B-50	30	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
	4800-010130-046	B-51	30	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
Building 73	4800-010131-049	B-31	2	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	15	6.2 U	72	83
	4800-010131-050	B-31	30	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	7.7 U	13	7.7 U	22	26
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010202-071	B-42	10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-057	B-44	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	7	5.5 U	16	22
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-063	B-46	2	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	8
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	6.4	5.4 U	5.4 U	6.6
	PS-S-14-01	Boring 14	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-14-02	Boring 14	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010207-092	B-32	30	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.4 U	6.6	6.4 U	11	15
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
	4800-010206-085	B-34	14	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010208-098	B-47	2	6.8 U	6.8 U	6.8 U	6.8 U	12	6.8 U	8.5	6.8 U	30	31
	4800-010208-099	B-47	29	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
Building 58	4800-010208-098	B-47	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010208-099	B-47	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	6.9
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	15	73	5.3 U	5.3 U	18	15	230	5.3 U	5.3 U	45
	4800-010215-134	B-38	30	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	6.9
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-140	B-40	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 20
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
Industrial Soil PRG^a				190,000	NC	NC	29,000,000	1,600,000	26,000,000	NC	100,000,000	22,000,000	29,000,000
Risk-Based Concentration (RBC)^b													
<i>Soil Ing., Dermal Contact, Inhalation</i>													
<i>Occupational</i>				770,000	NC	NC	41,000,000	NC	35,000,000	NC	270,000,000	29,000,000	21,000,000
<i>Construction Worker</i>				710,000	NC	NC	16,000,000	NC	12,000,000	NC	90,000,000	8,900,000	6,700,000
<i>Excavation Worker</i>				20,000,000	NC	NC	450,000,000	NC	330,000,000	NC	3.E+09	250,000,000	190,000,000
<i>Vol. to Outdoor Air - Occupational</i>				940,000	NC	NC	700,000,000	NC	4.E+09	NC	7.E+10	1.E+11	2.E+11
<i>Vapor Intr. Into Buildings - Occupational</i>				3,400,000	NC	NC	3.E+09	NC	1.E+10	NC	2.E+11	5.E+11	6.E+11
<i>Leaching to Groundwater - Occupational</i>				15,000	NC	NC	2,200,000	NC	4,000,000	NC	65,000,000	190,000,000	140,000,000
Soil SLV^c													
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				3,900,000	NC	NC	NC	2	NC	NC	NC	NC	NC
Industrial Hot Spot Level^d													
Electrical Substations	PS-S-10-01	Boring 10	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-10-02	Boring 10	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-11-01	Boring 11	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-11-02	Boring 11	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-12-01	Boring 12	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-12-02	Boring 12	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-13-01	Boring 13	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-13-02	Boring 13	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	4800-010226-155	S-7	0.5-1	5.8	5.8	5.8	5.8	5.8	5.8	11	5.8	5.8	14
	4800-010226-161	S-13	0.5-1	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	11
	4800-010226-163	S-15	0.5-1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	7.6
	4800-010226-164	S-16	0.5-1	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	9.9
	4800-010226-165	S-17	0.5-1	54	54	54	54	54	54	64	54	95	96
	4800-010226-170	S-22	0.5-1	5.9	5.9	5.9	5.9	5.9	5.9	19	5.9	31	26
	4800-010226-175	S-27	0.5-1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	4800-010226-177	S-29	0.5-1	5.3	5.3	5.3	5.3	5.3	5.3	8.9	5.3	5.3	5.3
	4800-010226-181	S-33	0.25-0.5	10	6	5.2 U	15	6.5	11	180	28	460	380
	4800-010226-195	S-47	0.25-0.5	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	7.2	5.3 U	19	23
	PS-S-15-01	Boring 15	0-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-15-02	Boring 15	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Berth 313	PS-S-08-01	Boring 8	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-08-02	Boring 8	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-16-02	Boring 16	16-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^d Industrial Land Use, Highly Concentrated Hot Spot Levels adjusted for 2004 PRGs, Final, Pre-Calculated Hot Spot Look-Up Tables, October 20, 1998

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 20
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
Industrial Soil PRG^a				2,100	210,000	2,100	21,000	210	2,100	210	NC
Risk-Based Concentration (RBC)^b											
<i>Soil Ing., Dermal Contact, Inhalation</i>											
<i>Occupational</i>				2,700	270,000	2,700	27,000	270	2,700	270	NC
<i>Construction Worker</i>				21,000	2,100,000	21,000	210,000	2,100	21,000	2,100	NC
<i>Excavation Worker</i>				590,000	59,000,000	590,000	5,900,000	59,000	590,000	59,000	NC
<i>Vol. to Outdoor Air - Occupational</i>				130,000,000	1.E+09	29,000,000	3.E+10	93,000,000	5.E+09	2.E+09	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				460,000,000	460,000,000	110,000,000	9.E+10	340,000,000	2.E+10	8.E+09	NC
<i>Leaching to Groundwater - Occupational</i>				67,000	6,700,000	210,000	2,100,000	17,000	580,000	64,000	NC
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	125,000	NC	NC	NC
Industrial Hot Spot Level^d								21,000			
Former Hazardous Waste Storage											
Area	4800-010129-039	B-48	2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010129-040	B-48	29	8	7.9	6.4 U	6.4 U	6.6	6.4 U	6.4 U	6.4 U
	4800-010130-043	B-50	2	6.8 U	7.5	6.8 U	6.8 U	8.2	8.7	6.8 U	9.4
	4800-010130-044	B-50	30	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
	4800-010130-046	B-51	30	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
Building 73	4800-010131-049	B-31	2	55	72	63	61	61	44	8.5	36
	4800-010131-050	B-31	30	10	13	10	11	14	12	7.7 U	14
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	7.6	5.6 U	9.5
	4800-010202-071	B-42	10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-057	B-44	2	8.1	12	5.5 U	7.2	8.1	7.9	5.5 U	7.6
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-063	B-46	2	5.8 U	6.6	8.5	7.8	7.9	9.1	5.8 U	9.2
	4800-010202-065	B-46	13	5.4 U	6.9	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	PS-S-14-01	Boring 14	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-14-02	Boring 14	16-18	NA	NA	NA	NA	NA	NA	NA	NA
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010207-092	B-32	30	8.5	8.5	6.4 U	6.4 U	7.4	6.4 U	6.4 U	6.4 U
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
	4800-010206-085	B-34	14	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Buiding 58	4800-010208-098	B-47	2	14	25	16	14	15	16	6.8 U	16
	4800-010208-099	B-47	29	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	14	87	5.3 U	5.3 U	9.4	5.3 U	6.3	19
	4800-010215-134	B-38	30	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-140	B-40	10	5.5 U	8.5	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U

Table 20
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
Industrial Soil PRG^a				2,100	210,000	2,100	21,000	210	2,100	210	NC
Risk-Based Concentration (RBC)^b											
<i>Soil Ing., Dermal Contact, Inhalation</i>											
<i>Occupational</i>				2,700	270,000	2,700	27,000	270	2,700	270	NC
<i>Construction Worker</i>				21,000	2,100,000	21,000	210,000	2,100	21,000	2,100	NC
<i>Excavation Worker</i>				590,000	59,000,000	590,000	5,900,000	59,000	590,000	59,000	NC
<i>Vol. to Outdoor Air - Occupational</i>				130,000,000	1.E+09	29,000,000	3.E+10	93,000,000	5.E+09	2.E+09	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				460,000,000	460,000,000	110,000,000	9.E+10	340,000,000	2.E+10	8.E+09	NC
<i>Leaching to Groundwater - Occupational</i>				67,000	6,700,000	210,000	2,100,000	17,000	580,000	64,000	NC
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC
<i>Birds</i>				NC	NC	NC	NC	125,000	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	21,000	NC	NC	NC
Industrial Hot Spot Level^d											
Electrical Substations	PS-S-10-01	Boring 10	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-10-02	Boring 10	16-18	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-11-01	Boring 11	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-11-02	Boring 11	16-18	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-12-01	Boring 12	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-12-02	Boring 12	16-18	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-13-01	Boring 13	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-13-02	Boring 13	16-18	NA	NA	NA	NA	NA	NA	NA	NA
	4800-010226-155	S-7	0.5-1	5.8	24	7.9	5.8	5.8	5.8	5.8	13
	4800-010226-161	S-13	0.5-1	6.1	49	5.3	5.3	5.3	5.3	5.3	9.7
	4800-010226-163	S-15	0.5-1	5.4	12	5.4	5.4	5.4	5.4	5.4	7.8
	4800-010226-164	S-16	0.5-1	5.7	34	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-165	S-17	0.5-1	54	150	75	62	58	55	54	72
	4800-010226-170	S-22	0.5-1	17	46	29	31	31	35	9.2	36
	4800-010226-175	S-27	0.5-1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	4800-010226-177	S-29	0.5-1	5.3	8.1	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-181	S-33	0.25-0.5	220	350	320	280	270	250	54	230
	4800-010226-195	S-47	0.25-0.5	12	21	24	20	22	28	5.3 U	29
	PS-S-15-01	Boring 15	0-3	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-15-02	Boring 15	16-18	NA	NA	NA	NA	NA	NA	NA	NA
Berth 313	PS-S-08-01	Boring 8	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-08-02	Boring 8	16-18	NA	NA	NA	NA	NA	NA	NA	NA
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-16-02	Boring 16	16-18	NA	NA	NA	NA	NA	NA	NA	NA

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

^d Industrial Land Use, Highly Concentrated Hot Spot Levels adjusted for 2004 PRGs, Final, Pre-Calculated H

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Dichlorodifluoromethane (CFC 12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane (CFC 11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Carbon Disulfide	Dichloromethane (Methylene Chloride)	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)	2-Butanone (MEK)
<i>Industrial Soil PRG^a</i>				310,000	NC	750	13,000	6,500	2,000,000	54,000,000	410,000	720,000	21,000	230,000	1,700,000	110,000,000
<i>Risk-Based Concentration (RBC)^b</i>																
<i>Soil Ing., Dermal Contact, Inhalation</i>																
<i>Occupational</i>				NC	NC	3,700	NC	NC	NC	NC	26,000,000	NC	NC	9,700,000	NC	NC
<i>Construction Worker</i>				NC	NC	29,000	NC	NC	NC	NC	12,000,000	NC	NC	4,600,000	NC	NC
<i>Excavation Worker</i>				NC	NC	800,000	NC	NC	NC	NC	>100,000,000	NC	NC	>100,000,000	NC	NC
<i>Vol. to Outdoor Air - Occupational</i>				NC	NC	82,000	NC	NC	NC	NC	>1,200,000	NC	NC	>2,470,000	NC	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				NC	NC	2,000	NC	NC	NC	NC	640,000	NC	NC	230,000	NC	NC
<i>Leaching to Groundwater - Occupational</i>				NC	NC	9.9	NC	NC	NC	NC	43,000	NC	NC	11,000	NC	NC
<i>Soil SLV^c</i>																
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	NC	NC	1,250,000	NC	3,750,000	NC	730,000	2,500,000	NC
<i>Former Hazardous Waste Storage Area</i>																
Building 73	4800-010129-039	B-48	2	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	120	7.2 U	7.2 U	30	7.2 U	7.2 U	29 U
	4800-010129-040	B-48	29	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	220	6.5 U	6.5 U	13 U	6.5 U	6.5 U	26 U
	4800-010129-041	B-49	2	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	75	6.7 U	6.7 U	13 U	6.7 U	6.7 U	27 U
	4800-010129-042	B-49	29	7 U	7 U	7 U	7 U	7 U	7 U	180	7 U	7 U	22	7 U	7 U	28 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	260	6.8 U	6.8 U	14 U	6.8 U	6.8 U	27 U
	4800-010130-044	B-50	30	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	210	6.3 U	6.3 U	13 U	6.3 U	6.3 U	25 U
	4800-010130-045	B-51	2	7 U	7 U	7 U	7 U	7 U	7 U	490	7 U	7 U	14 U	7 U	7 U	28 U
	4800-010130-046	B-51	30	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	100	7.2 U	7.2 U	14 U	7.2 U	7.2 U	29 U
	4800-010131-051	B-29	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U
	4800-010201-052	B-29	29	7 U	7 U	7 U	7 U	7 U	7 U	140	7 U	7 U	14 U	7 U	7 U	28 U
	4800-010131-047	B-30	2	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	58 U	5.8 U	5.8 U	12 U	5.8 U	5.8 U	23 U
	4800-010131-048	B-30	30	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	68 U	6.8 U	6.8 U	14 U	6.8 U	6.8 U	27 U
	4800-010131-049	B-31	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	61 U	6.1 U	6.1 U	12 U	6.1 U	6.1 U	24 U
	4800-010131-050	B-31	30	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	140	7.6 U	7.6 U	15 U	7.6 U	7.6 U	30 U
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	56 U	5.6 U	5.6 U	11 U	5.6 U	5.6 U	22 U
	4800-010202-071	B-42	10	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	73	5.3 U	5.3 U	11 U	5.3 U	5.3 U	21 U
	4800-010201-053	B-43	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U
	4800-010201-054	B-43	29	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U
	4800-010202-057	B-44	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	21 U
	4800-010201-055	B-45	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U
	4800-010201-056	B-45	29	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	160	6.7 U	6.7 U	13 U	6.7 U	6.7 U	27 U
	4800-010202-063	B-46	2	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	57 U	5.7 U	5.7 U	11 U	5.7 U	5.7 U	23 U
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Dichlorodifluoromethane (CFC 12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane (CFC 11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Carbon Disulfide	Dichloromethane (Methylene Chloride)	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)	2-Butanone (MEK)
Industrial Soil PRG^a				310,000	NC	750	13,000	6,500	2,000,000	54,000,000	410,000	720,000	21,000	230,000	1,700,000	110,000,000
Risk-Based Concentration (RBC)^b					NC	NC	3,700	NC	NC	NC	26,000,000	NC	NC	9,700,000	NC	NC
Soil Ing., Dermal Contact, Inhalation					NC	NC	29,000	NC	NC	NC	12,000,000	NC	NC	4,600,000	NC	NC
Occupational					NC	NC	800,000	NC	NC	NC	>100,000,000	NC	NC	>100,000,000	NC	NC
Construction Worker					NC	NC	82,000	NC	NC	NC	>1,200,000	NC	NC	>2,470,000	NC	NC
Excavation Worker					NC	NC	2,000	NC	NC	NC	640,000	NC	NC	230,000	NC	NC
Vol. to Outdoor Air - Occupational					NC	NC	9.9	NC	NC	NC	43,000	NC	NC	11,000	NC	NC
Vapor Intr. Into Buildings - Occupational																
Leaching to Groundwater - Occupational																
Soil SLV^c																
Birds					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mammals					NC	NC	NC	NC	NC	NC	1,250,000	3,750,000	NC	730,000	2,500,000	NC
Building 4	4800-010207-090	B-32	2	6 U	6 U	6 U	6 U	6 U	60 U	6 U	6 U	12 U	6 U	6 U	24 U	
	4800-010207-092	B-32	30	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	63 U	6.3 U	6.3 U	13 U	6.3 U	6.3 U	25 U	
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	13 U	6.6 U	6.6 U	26 U	
	4800-010206-089	B-33	30	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	67 U	6.7 U	6.7 U	13 U	6.7 U	6.7 U	27 U	
	4800-010206-084	B-34	7	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U	
	4800-010206-085	B-34	14	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	56 U	5.6 U	5.6 U	11 U	5.6 U	5.6 U	22 U	
	4800-010207-094	B-35	24.5	8 U	8 U	8 U	8 U	8 U	8 U	80 U	8 U	8 U	16 U	8 U	8 U	32 U
Paint Shed/Blast Booth Area																
	4800-010219-150	B-37	2	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	57 U	5.7 U	5.7 U	11 U	5.7 U	5.7 U	23 U	
	4800-010219-151	B-37	30	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	72 U	7.2 U	7.2 U	14 U	7.2 U	7.2 U	29 U	
	4800-010215-133	B-38	2	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	53 U	5.3 U	5.3 U	11 U	5.3 U	5.3 U	21 U	
	4800-010215-134	B-38	30	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	69 U	6.9 U	6.9 U	14 U	6.9 U	6.9 U	28 U	
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	71 U	7.1 U	7.1 U	14 U	7.1 U	7.1 U	28 U	
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U	
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U	
	4800-010215-140	B-40	10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U	
	4800-010219-153	B-41	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	71 U	7.1 U	7.1 U	14 U	7.1 U	7.1 U	28 U	
	4800-010219-154	B-41	27	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	68 U	6.8 U	6.8 U	14 U	6.8 U	6.8 U	27 U	
	PS-S-12-01	Boring 12	0-2	100 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	1,000 U	100 U	100 U	2,000 U	
	PS-S-12-02	Boring 12	16-18	100 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	1,050	100 U	100 U	2,000 U	
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	100 U	100 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	1,000 U	100 U	100 U	2,000 U
	PS-S-16-02	Boring 16	16-18	100 U	100 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	1,000 U	100 U	100 U	2,000 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004.

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene	Trichloroethene (TCE)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane	
Industrial Soil PRG^a				NC	150,000	470	NC	1,200,000	NC	550	600	1,400	110	740	1,800	NC	
Risk-Based Concentration (RBC)^b				NC	4,900,000	NC	NC	>100,000,000	NC	NC	NC	3,400	NC	NC	NC	NC	
Soil Ing., Dermal Contact, Inhalation				NC	2,300,000	NC	NC	76,000,000	NC	NC	NC	41,000	NC	NC	NC	NC	
Occupational				NC	65,000,000	NC	NC	>100,000,000	NC	NC	NC	1,100,000	NC	NC	NC	NC	
Construction Worker				NC	>959,000	NC	NC	>971,000	NC	NC	NC	3,300	NC	NC	NC	NC	
Excavation Worker				NC	110,000	NC	NC	>971,000	NC	NC	NC	94	NC	NC	NC	NC	
Vol. to Outdoor Air - Occupational				NC	4,000	NC	NC	560,000	NC	NC	NC	9.9	NC	NC	NC	NC	
Vapor Intr. Into Buildings - Occupational				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Leaching to Groundwater - Occupational				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	70,000	NC	NC	NC	NC	NC	
Birds				NC	2,500,000	1,875,000	NC	55,550,000	NC	2,000,000	2,780,000	3,300,000	40,000	NC	NC	NC	NC
Mammals				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Former Hazardous Waste Storage Area																	
Building 73	4800-010129-039	B-48	2	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	
	4800-010129-040	B-48	29	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
	4800-010129-041	B-49	2	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010129-042	B-49	29	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010130-044	B-50	30	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
	4800-010130-045	B-51	2	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
	4800-010130-046	B-51	30	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010131-051	B-29	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-052	B-29	29	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
	4800-010131-047	B-30	2	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
	4800-010131-048	B-30	30	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010131-049	B-31	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010131-050	B-31	30	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010202-071	B-42	10	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
	4800-010201-053	B-43	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010201-054	B-43	29	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010202-057	B-44	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-055	B-45	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010201-056	B-45	29	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010202-063	B-46	2	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene	Trichloroethene (TCE)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane
Industrial Soil PRG^a				NC	150,000	470	NC	1,200,000	NC	550	600	1,400	110	740	1,800	NC
Risk-Based Concentration (RBC)^b																
<i>Soil Ing., Dermal Contact, Inhalation</i>																
<i>Occupational</i>				NC	4,900,000	NC	NC	>100,000,000	NC	NC	NC	NC	3,400	NC	NC	NC
<i>Construction Worker</i>				NC	2,300,000	NC	NC	76,000,000	NC	NC	NC	NC	41,000	NC	NC	NC
<i>Excavation Worker</i>				NC	65,000,000	NC	NC	>100,000,000	NC	NC	NC	NC	1,100,000	NC	NC	NC
<i>Vol. to Outdoor Air - Occupational</i>				NC	>959,000	NC	NC	>971,000	NC	NC	NC	NC	3,300	NC	NC	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				NC	110,000	NC	NC	>971,000	NC	NC	NC	NC	94	NC	NC	NC
<i>Leaching to Groundwater - Occupational</i>				NC	4,000	NC	NC	560,000	NC	NC	NC	NC	9.9	NC	NC	NC
Soil SLV^c																
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	70,000	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	2,500,000	1,875,000	NC	55,550,000	NC	2,000,000	2,780,000	3,300,000	40,000	NC	NC	NC
Building 4				6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
	4800-010207-090	B-32	2	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
	4800-010207-092	B-32	30	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
	4800-010206-087	B-33	2	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010206-089	B-33	30	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010206-084	B-34	7	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010206-085	B-34	14	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
	4800-010207-094	B-35	24.5													
Paint Shed/Blast Booth Area				5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010219-150	B-37	2	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010219-151	B-37	30	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
	4800-010215-133	B-38	2	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
	4800-010215-134	B-38	30	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-135	B-39	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010215-136	B-39	10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-139	B-40	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-140	B-40	10	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010219-153	B-41	2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	4800-010219-154	B-41	27	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-12-01	Boring 12	0-2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-12-02	Boring 12	16-18	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Berths 304 and 305				100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-16-01	Boring 16	0-2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-16-02	Boring 16	16-18	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004.

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MBK)	1,3-Dichloropropane	Tetrachloroethylene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes
Industrial Soil PRG^a				NC	NC	520,000	NC	1,600	NC	360,000	1,300	2,600	73	530,000	7,300	400,000	420,000
Risk-Based Concentration (RBC)^b				NC	NC	NC	NC	NC	NC	5,100	NC	NC	NC	NC	NC	NC	NC
Soil Ing., Dermal Contact, Inhalation				NC	NC	NC	NC	NC	NC	40,000	NC	NC	NC	NC	NC	NC	NC
Occupational				NC	NC	NC	NC	NC	NC	1,100,000	NC	NC	NC	NC	NC	NC	NC
Construction Worker				NC	NC	NC	NC	NC	NC	62,000	NC	NC	NC	NC	NC	NC	NC
Excavation Worker				NC	NC	NC	NC	NC	NC	1,500	NC	NC	NC	NC	NC	NC	NC
Vol. to Outdoor Air - Occupational				NC	NC	NC	NC	NC	NC	37	NC	NC	NC	NC	NC	NC	NC
Vapor Intr. Into Buildings - Occupational				NC	NC	NC	NC	NC	NC	80,000	NC	NC	NC	NC	NC	NC	NC
Leaching to Groundwater - Occupational				NC	NC	NC	NC	NC	NC	7,300	400,000	420,000					
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Birds				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mammals				NC	NC	1,440,000	NC	NC	NC	NC	80,000	NC	NC	NC	NC	NC	NC
Former Hazardous Waste Storage Area																	
Building 73	4800-010129-039	B-48	2	29 U	7.2 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010129-040	B-48	29	26 U	6.5 U	6.5 U	6.5 U	6.5 U	26 U	6.5 U	6.5 U	26 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
	4800-010129-041	B-49	2	27 U	6.7 U	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010129-042	B-49	29	28 U	7 U	7 U	7 U	7 U	28 U	7 U	7 U	28 U	7 U	7 U	7 U	7 U	7.2
	4800-010130-043	B-50	2	27 U	6.8 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010130-044	B-50	30	25 U	6.3 U	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
	4800-010130-045	B-51	2	28 U	7 U	7 U	7 U	7 U	28 U	7 U	7 U	28 U	7 U	7 U	7 U	7 U	7 U
	4800-010130-046	B-51	30	29 U	7.2 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010131-051	B-29	2	22 U	5.4 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-052	B-29	29	28 U	7 U	7 U	7 U	7 U	28 U	7 U	7 U	28 U	7 U	7 U	7 U	7 U	7 U
Building 43, 50 and 80 Area	4800-010131-047	B-30	2	23 U	5.8 U	5.8 U	5.8 U	5.8 U	23 U	5.8 U	5.8 U	23 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
	4800-010131-048	B-30	30	27 U	6.8 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010131-049	B-31	2	24 U	6.1 U	6.1 U	6.1 U	6.1 U	24 U	6.1 U	6.1 U	24 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010131-050	B-31	30	30 U	7.6 U	7.6 U	7.6 U	7.6 U	30 U	7.6 U	7.6 U	30 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U
	4800-010202-070	B-42	2	22 U	5.6 U	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010202-071	B-42	10	21 U	5.3 U	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
	4800-010201-053	B-43	2	22 U	5.5 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010201-054	B-43	29	22 U	5.5 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010202-057	B-44	2	22 U	5.4 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-058	B-44	13	21 U	5.4 U	5.4 U	5.4 U	5.4 U	21 U	5.4 U	5.4 U	21 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-055	B-45	2	22 U	5.5 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010201-056	B-45	29	27 U	6.7 U	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010202-063	B-46	2	23 U	5.7 U	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010202-065	B-46	13	22 U	5.4 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MBK)	1,3-Dichloropropane	Tetrachloroethylene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes
Industrial Soil PRG^a				NC	NC	520,000	NC	1,600	NC	360,000	1,300	2,600	73	530,000	7,300	400,000	420,000
Risk-Based Concentration (RBC)^b				NC	NC	NC	NC	NC	NC	5,100	NC	NC	NC	NC	NC	NC	NC
Soil Ing., Dermal Contact, Inhalation				NC	NC	NC	NC	NC	NC	40,000	NC	NC	NC	NC	NC	NC	NC
Occupational				NC	NC	NC	NC	NC	NC	1,100,000	NC	NC	NC	NC	NC	NC	NC
Construction Worker				NC	NC	NC	NC	NC	NC	62,000	NC	NC	NC	NC	NC	NC	NC
Excavation Worker				NC	NC	NC	NC	NC	NC	1,500	NC	NC	NC	NC	NC	NC	NC
Vol. to Outdoor Air - Occupational				NC	NC	NC	NC	NC	NC	37	NC	NC	NC	NC	NC	NC	NC
Vapor Intr. Into Buildings - Occupational				NC	NC	NC	NC	NC	NC	80,000	NC	NC	NC	NC	NC	NC	NC
Leaching to Groundwater - Occupational				NC	NC	NC	NC	NC	NC	2,600	73	530,000	7,300	400,000	420,000		
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Birds				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mammals				NC	NC	1,440,000	NC	NC	NC	80,000	NC	NC	NC	NC	NC	NC	NC
Building 4	4800-010207-090	B-32	2	24 U	6 U	6 U	6 U	6 U	24 U	6 U	6 U	24 U	6 U	6 U	6 U	6 U	6 U
	4800-010207-092	B-32	30	25 U	6.3 U	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
	4800-010206-087	B-33	2	26 U	6.6 U	6.6 U	6.6 U	6.6 U	26 U	6.6 U	6.6 U	26 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
	4800-010206-089	B-33	30	27 U	6.7 U	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010206-084	B-34	7	22 U	5.5 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010206-085	B-34	14	22 U	5.6 U	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010207-094	B-35	24.5	32 U	8 U	8 U	8 U	8 U	32 U	8 U	8 U	32 U	8 U	8 U	8 U	8 U	8 U
Paint Shed/Blast Booth Area				23 U	5.7 U	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010219-150	B-37	2	29 U	7.2 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010219-151	B-37	30	21 U	5.3 U	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
	4800-010215-133	B-38	2	28 U	6.9 U	6.9 U	6.9 U	6.9 U	28 U	6.9 U	6.9 U	28 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
	4800-010215-134	B-38	30	28 U	7.1 U	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-135	B-39	2	22 U	5.5 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010215-136	B-39	10	22 U	5.4 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-139	B-40	2	22 U	5.4 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-140	B-40	10	28 U	7.1 U	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010219-153	B-41	2	27 U	6.8 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010219-154	B-41	27	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-12-01	Boring 12	0-2	2,000 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-12-02	Boring 12	16-18	2,000 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	2,000 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-16-02	Boring 16	16-18	2,000 U	100 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004.

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	c-Xylene	Styrene	Bromoform	Isopropylbenzene	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	n-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene
Industrial Soil PRG^a				420,000	1,700,000	220,000	NC	930	76	92,000	240,000	NC	NC	70,000	390,000	170,000	220,000
Risk-Based Concentration (RBC)^b				NC	NC	NC	51,000,000	NC	NC	NC	19,000,000	NC	NC	1,500,000	NC	1,500,000	NC
Soil Ing., Dermal Contact, Inhalation				NC	NC	NC	24,000,000	NC	NC	NC	9,300,000	NC	NC	1,400,000	NC	1,400,000	NC
Occupational				NC	NC	NC	660,000,000	NC	NC	NC	260,000,000	NC	NC	40,000,000	NC	40,000,000	NC
Construction Worker				NC	NC	NC	51,000,000	NC	NC	NC	19,000,000	NC	NC	790,000	NC	790,000	NC
Excavation Worker				NC	NC	NC	14,000,000	NC	NC	NC	6,600,000	NC	NC	140,000	NC	840,000	NC
Vol. to Outdoor Air - Occupational				NC	NC	NC	1,800,000	NC	NC	NC	830,000	NC	NC	12,000	NC	55,000	NC
Vapor Intr. Into Buildings - Occupational				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Leaching to Groundwater - Occupational				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Birds				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mammals				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Former Hazardous Waste Storage Area																	
Building 73	4800-010129-039	B-48	2	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	29 U
	4800-010129-040	B-48	29	6.5 U	6.5 U	6.5 U	26 U	6.5 U	6.5 U	6.5 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
	4800-010129-041	B-49	2	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010129-042	B-49	29	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010130-044	B-50	30	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
	4800-010130-045	B-51	2	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010130-046	B-51	30	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	29 U
	4800-010131-051	B-29	2	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-052	B-29	29	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010131-047	B-30	2	5.8 U	5.8 U	5.8 U	23 U	5.8 U	5.8 U	5.8 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
	4800-010131-048	B-30	30	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010131-049	B-31	2	6.1 U	6.1 U	6.1 U	24 U	6.1 U	6.1 U	6.1 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U
	4800-010131-050	B-31	30	7.6 U	7.6 U	7.6 U	30 U	7.6 U	7.6 U	7.6 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-071	B-42	10	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-053	B-43	2	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-054	B-43	29	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-057	B-44	2	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	21 U	5.4 U	5.4 U	5.4 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-055	B-45	2	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-056	B-45	29	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010202-063	B-46	2	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	c-Xylene	Styrene	Bromoform	Isopropylbenzene	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	i-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene
Industrial Soil PRG^a				420,000	1,700,000	220,000	NC	930	76	92,000	240,000	NC	NC	70,000	390,000	170,000	220,000
Risk-Based Concentration (RBC)^b																	
<i>Soil Ing., Dermal Contact, Inhalation</i>																	
<i>Occupational</i>				NC	NC	NC	51,000,000	NC	NC	NC	19,000,000	NC	NC	1,500,000	NC	1,500,000	NC
<i>Construction Worker</i>				NC	NC	NC	24,000,000	NC	NC	NC	9,300,000	NC	NC	1,400,000	NC	1,400,000	NC
<i>Excavation Worker</i>				NC	NC	NC	660,000,000	NC	NC	NC	260,000,000	NC	NC	40,000,000	NC	40,000,000	NC
<i>Vol. to Outdoor Air - Occupational</i>				NC	NC	NC	51,000,000	NC	NC	NC	19,000,000	NC	NC	790,000	NC	790,000	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				NC	NC	NC	14,000,000	NC	NC	NC	6,600,000	NC	NC	140,000	NC	840,000	NC
<i>Leaching to Groundwater - Occupational</i>				NC	NC	NC	1,800,000	NC	NC	NC	830,000	NC	NC	12,000	NC	55,000	NC
Soil SLV^c																	
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Building 4				6 U	6 U	6 U	24 U	6 U	6 U	6 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U
	4800-010207-090	B-32	2	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
	4800-010207-092	B-32	30	6.6 U	6.6 U	6.6 U	26 U	6.6 U	6.6 U	6.6 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
	4800-010206-087	B-33	2	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010206-089	B-33	30	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010206-084	B-34	7	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010206-085	B-34	14	8 U	8 U	8 U	32 U	8 U	8 U	8 U	32 U	32 U	32 U	32 U	32 U	32 U	32 U
	4800-010207-094	B-35	24.5														
Paint Shed/Blast Booth Area																	
	4800-010219-150	B-37	2	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
	4800-010219-151	B-37	30	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	29 U
	4800-010215-133	B-38	2	5.8	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
	4800-010215-134	B-38	30	6.9 U	6.9 U	6.9 U	28 U	6.9 U	6.9 U	6.9 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-140	B-40	10	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010219-153	B-41	2	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010219-154	B-41	27	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	PS-S-12-01	Boring 12	0-2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-12-02	Boring 12	16-18	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Berths 304 and 305																	
	PS-S-16-01	Boring 16	0-2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-16-02	Boring 16	16-18	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004.

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	1,3-Dichlorobenzene	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	Naphthalene	Hexachlorobutadiene
<i>Industrial Soil PRG^a</i>				60,000	NC	7,900	240,000	60,000	2,000	220,000	NC	190,000	22,000
<i>Risk-Based Concentration (RBC)^b</i>													
<i>Soil Ing., Dermal Contact, Inhalation</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Construction Worker</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Excavation Worker</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Vol. to Outdoor Air - Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Leaching to Groundwater - Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Soil SLV^c</i>													
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	NC	NC	NC	NC	3,900,000	NC
<i>Former Hazardous Waste Storage Area</i>													
Building 73	4800-010129-039	B-48	2	7.2 U	29 U	7.2 U	29 U	7.2 U	29 U	29 U	29 U	29 U	29 U
	4800-010129-040	B-48	29	6.5 U	26 U	6.5 U	26 U	6.5 U	26 U	26 U	26 U	26 U	26 U
	4800-010129-041	B-49	2	6.7 U	27 U	6.7 U	27 U	6.7 U	27 U	27 U	27 U	27 U	27 U
	4800-010129-042	B-49	29	7 U	28 U	7 U	28 U	7 U	28 U	28 U	28 U	28 U	28 U
	4800-010130-043	B-50	2	6.8 U	27 U	6.8 U	27 U	6.8 U	27 U	27 U	27 U	27 U	27 U
	4800-010130-044	B-50	30	6.3 U	25 U	6.3 U	25 U	6.3 U	25 U	25 U	25 U	25 U	25 U
	4800-010130-045	B-51	2	7 U	28 U	7 U	28 U	7 U	28 U	28 U	28 U	28 U	28 U
	4800-010130-046	B-51	30	7.2 U	29 U	7.2 U	29 U	7.2 U	29 U	29 U	29 U	29 U	29 U
	4800-010131-051	B-29	2	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-052	B-29	29	7 U	28 U	7 U	28 U	7 U	28 U	28 U	28 U	28 U	28 U
	4800-010131-047	B-30	2	5.8 U	23 U	5.8 U	23 U	5.8 U	23 U	23 U	23 U	23 U	23 U
	4800-010131-048	B-30	30	6.8 U	27 U	6.8 U	27 U	6.8 U	27 U	27 U	27 U	27 U	27 U
	4800-010131-049	B-31	2	6.1 U	24 U	6.1 U	24 U	6.1 U	24 U	24 U	24 U	24 U	24 U
	4800-010131-050	B-31	30	7.6 U	30 U	7.6 U	30 U	7.6 U	30 U	30 U	30 U	30 U	30 U
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	22 U	5.6 U	22 U	5.6 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-071	B-42	10	5.3 U	21 U	5.3 U	21 U	5.3 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-053	B-43	2	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-054	B-43	29	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-057	B-44	2	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-058	B-44	13	5.4 U	21 U	5.4 U	21 U	5.4 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-055	B-45	2	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-056	B-45	29	6.7 U	27 U	6.7 U	27 U	6.7 U	27 U	27 U	27 U	27 U	27 U
	4800-010202-063	B-46	2	5.7 U	23 U	5.7 U	23 U	5.7 U	23 U	23 U	23 U	23 U	23 U
	4800-010202-065	B-46	13	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U

Table 21
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to PRGs, RBCs and SLVs
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	1,3-Dichlorobenzene	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	Naphthalene	Hexachlorobutadiene
Industrial Soil PRG^a				60,000	NC	7,900	240,000	60,000	2,000	220,000	NC	190,000	22,000
Risk-Based Concentration (RBC)^b													
<i>Soil Ing., Dermal Contact, Inhalation</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Construction Worker</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Excavation Worker</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Vol. to Outdoor Air - Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Vapor Intr. Into Buildings - Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Leaching to Groundwater - Occupational</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Soil SLV^c				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Birds</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Mammals</i>				NC	NC	NC	NC	NC	NC	NC	NC	3,900,000	NC
Building 4	4800-010207-090	B-32	2	6 U	24 U	6 U	24 U	6 U	24 U	24 U	24 U	24 U	24 U
	4800-010207-092	B-32	30	6.3 U	25 U	6.3 U	25 U	6.3 U	25 U	25 U	25 U	25 U	25 U
	4800-010206-087	B-33	2	6.6 U	26 U	6.6 U	26 U	6.6 U	26 U	26 U	26 U	26 U	26 U
	4800-010206-089	B-33	30	6.7 U	27 U	6.7 U	27 U	6.7 U	27 U	27 U	27 U	27 U	27 U
	4800-010206-084	B-34	7	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010206-085	B-34	14	5.6 U	22 U	5.6 U	22 U	5.6 U	22 U	22 U	22 U	22 U	22 U
	4800-010207-094	B-35	24.5	8 U	32 U	8 U	32 U	8 U	32 U	32 U	32 U	32 U	32 U
Paint Shed/Blast Booth Area				5.7 U	23 U	5.7 U	23 U	5.7 U	23 U	23 U	23 U	23 U	23 U
	4800-010219-150	B-37	2	7.2 U	29 U	7.2 U	29 U	7.2 U	29 U	29 U	29 U	29 U	29 U
	4800-010219-151	B-37	30	5.3 U	21 U	5.3 U	21 U	5.3 U	21 U	21 U	21 U	21 U	21 U
	4800-010215-133	B-38	2	6.9 U	28 U	6.9 U	28 U	6.9 U	28 U	28 U	28 U	28 U	28 U
	4800-010215-134	B-38	30	7.1 U	28 U	7.1 U	28 U	7.1 U	28 U	28 U	28 U	28 U	28 U
	4800-010215-135	B-39	2	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-136	B-39	10	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-139	B-40	2	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-140	B-40	10	7.1 U	28 U	7.1 U	28 U	7.1 U	28 U	28 U	28 U	28 U	28 U
	4800-010219-153	B-41	2	6.8 U	27 U	6.8 U	27 U	6.8 U	27 U	27 U	27 U	27 U	27 U
	4800-010219-154	B-41	27	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U
	PS-S-12-01	Boring 12	0-2	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U
	PS-S-12-02	Boring 12	16-18	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U
	PS-S-16-02	Boring 16	16-18	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004.

^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum-

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001.

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds PRG or RBC.

Box indicates result exceeds SLV.

Table 22**Benzene, Toluene, Ethylbenzene, Xylene (BTEX) Concentrations in Soil (mg/kg) Compared to PRGs, RBCs and SLVs****Main Shipyard Area****SIUF OU1 Phase II RI Work Plan**

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene
<i>Industrial Soil PRG^a</i>				1.4	520	400	420	420
<i>Risk-Based Concentration (RBC)^b</i>								
<i>Soil Ing., Dermal Contact, Inhalation</i>								
<i>Occupational</i>				34	68,000	74,000	24,000	24,000
<i>Construction Worker</i>				340	39,000	28,000	19,000	19,000
<i>Excavation Worker</i>				9,400	1,100,000	770,000	520,000	520,000
<i>Vol. to Outdoor Air - Occupational</i>				48	51,000	140,000	14,000	14,000
<i>Vapor Intr. Into Buildings - Occupational</i>				1.2	2,200	11,000	1,300	1,300
<i>Leaching to Groundwater - Occupational</i>				0.052	180	620	100	100
<i>Soil SLV^c</i>								
<i>Birds</i>				NC	NC	NC	NC	NC
<i>Mammals</i>				3,300	1,440	NC	NC	NC
Building 58	4800-010208-098	B-47	2	0.069 U	0.14 U	0.14 U	0.14 U	0.14 U
	4800-010208-099	B-47	29	0.07 U	0.14 U	0.14 U	0.14 U	0.14 U
Electrical Substations	4800-010226-155	S-7	0.5-1	0.059 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010226-161	S-13	0.5-1	0.052 U	0.1 U	0.1 U	0.1 U	0.1 U
	4800-010226-163	S-15	0.5-1	0.055 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-164	S-16	0.5-1	0.052 U	0.1 U	0.1 U	0.1 U	0.1 U
	4800-010226-165	S-17	0.5-1	0.054 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-170	S-22	0.5-1	0.058 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010226-175	S-27	0.5-1	0.054 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-177	S-29	0.5-1	0.053 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-181	S-33	0.25-0.5	0.052 U	0.1 U	0.1 U	0.1 U	0.1 U
	4800-010226-195	S-47	0.25-0.5	0.053 U	0.11 U	0.11 U	0.11 U	0.11 U

U = not detected

Deep subsurface samples not included in screening.

^a EPA Region 9 Preliminary Remediation Goal (PRG) for Industrial Soils, October 2004^b DEQ, Risk-Based Decision Making for the Remediation of Petroleum

Contaminated Sites, September 22, 2003.

^c DEQ Level II Screening Level Values (SLVs) for Soil, December 2001

NA = not analyzed

NC = no screening level

Shading indicates sampling result exceeds RBC.

Box indicates result exceeds SLV.

Table 23
Metal Concentrations in Soil (mg/kg) Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Zinc	Barium	Selenium
<i>Toxicity SLV^a</i>				64	33	4.98	111	149	128	1.06	48.6	5	459	NC	5
<i>Bioaccumulation SLV^a</i>				10	NC	0.003	4,200	10	128	NC	316	NC	3	NC	0.1
<i>Background^b</i>				4	7	1	42	35	17	0.07	38	1	86	NC	2
Former Hazardous Waste Storage Area															
4800-010129-039	B-48	2		10.7 U	3.5	1.1 U	23.8	18.5	6.5	0.03	21	2.1 U	53	NA	NA
4800-010130-043	B-50	2		11.6 U	2.9	1.2 U	24.8	28.9	8.4	0.06	20.8	2.3 U	58.4	NA	NA
4800-010130-045	B-51	2		11.7 U	3.9	1.2 U	29.7	32.5	8.8	0.05	26.2	2.3 U	66.9	NA	NA
4800-010131-051	B-29	2		10.9 U	2.1	1.1 U	16.6	16.8	3.4	0.02 U	18.8	2.2 U	51.3	NA	NA
4800-010131-047	B-30	2		11.8 U	2.2	1.2 U	15.9	15.8	3.8	0.02	19.8	2.4 U	45.8	NA	NA
4800-010131-049	B-31	2		12.5 U	5.7	1.5	34.8	90.6	196		0.11	31.4	2.5 U	645	NA
Building 73															
4800-010201-047	B-30	2													
4800-010131-049	B-31	2													
Building 43, 50 and 80 Area															
4800-010202-070	B-42	2		11.3 U	2.4	1.1 U	17.3	17.3	3.4	0.02 U	22.4	2.3 U	51.3	NA	NA
4800-010201-053	B-43	2		11.2 U	2.8	1.1 U	18.6	16.9	2.7	0.02 U	20.5	2.2 U	53.7	NA	NA
4800-010202-057	B-44	2		11 U	3.2	1.1 U	16.5	16.5	2.6	0.02 U	19.5	2.2 U	50.1	NA	NA
4800-010201-055	B-45	2		11.3 U	2.9	1.1 U	19.5	38.8	6.1	0.03	21.7	2.3 U	66.8	NA	NA
4800-010202-063	B-46	2		11.6 U	2	1.2 U	19.6	17.2	3.5	0.07	22.1	2.3 U	52.4	NA	NA
PS-S-14-01	Boring 14	0-2		NA	2.85	0.5 U	13.7	NA	14.6	0.1 U	NA	0.5 U	NA	117	0.5 U
4800-010207-090	B-32	2		11.9 U	2.4	1.2 U	20.7	19.3	3.3	0.02 U	22.2	2.4 U	50	NA	NA
4800-010206-087	B-33	2		10.9 U	2.7	1.1 U	26.7	27.7	6.7	0.03	24.2	2.2 U	62.6	NA	NA
4800-010208-098	B-47	2		11.1 U	2.7	1.1 U	31.4	45.6	9.5	0.07	20.4	2.2 U	72.9	NA	NA
Building 4															
4800-010207-090	B-32	2													
4800-010206-087	B-33	2													
Building 58															
Paint Shed/Blast Booth Area															
4800-010219-150	B-37	2		11.3 U	3.9	1.1 U	20.9	19	3.8	0.04	23.5	2.3 U	53.3	NA	NA
4800-010215-133	B-38	2		10.7 U	1.7	1.1 U	15.1	16.7	2.7	0.02 U	20.4	2.1 U	49.3	NA	NA
4800-010215-135	B-39	2		11.9 U	2.3	1.2 U	29.6	28.5	5	0.04	29	2.4 U	71.4	NA	NA
4800-010215-139	B-40	2		10.8 U	1.6	1.1 U	13.7	15.3	2	0.02 U	17	2.2 U	48	NA	NA
4800-010219-153	B-41	2		11.8 U	2.7	1.2 U	19.2	18.6	2.4	0.02 U	23.5	2.4 U	65.2	NA	NA
PS-S-10-01	Boring 10	0-2		NA	3.46	0.5 U	20.9	NA	7.14	0.1 U	NA	0.5 U	NA	254	0.775
PS-S-11-01	Boring 11	0-2		NA	3.65	0.5 U	25.1	NA	8.99	0.1 U	NA	0.5 U	NA	187	0.715
PS-S-12-01	Boring 12	0-2		NA	2.92	0.5 U	15.9	NA	5.66	0.1 U	NA	0.5 U	NA	130	0.5 U
PS-S-13-01	Boring 13	0-2		NA	3.67	0.5 U	14.8	NA	6.47	0.1 U	NA	0.5 U	NA	152	0.5 U
Electrical Substations	PS-S-15-01	Boring 15	0-3	NA	1.57	0.5 U	8.1	NA	18.1	0.1 U	NA	0.5 U	NA	55.6	0.5 U
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	NA	2.67	0.5 U	13.5	NA	5 U	0.1 U	NA	0.5 U	NA	120	0.5 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005.

^b DEQ Default soil background concentrations for metals, October 28, 2002.

NA = not analyzed

NC = no screening level

Box indicates result exceeds background concentration and SLV.

Table 24
Polychlorinated Biphenyl (PCB) Concentrations in Soil (ug/kg) Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs ^b
<i>Toxicity SLV^a</i>				530	NC	NC	NC	1,500	300	200	NC	NC	676
<i>Bioaccumulation SLV^a</i>				420	NC	NC	2	4	10	NC	NC	NC	NC
Former Hazardous Waste Storage Area													
	4800-010129-039	B-48	2	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	0.1
	4800-010130-043	B-50	2	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	0.1
	4800-010130-045	B-51	2	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	NA	0.1
Building 73	4800-010202-070	B-42	2	10 U	20 U	10 U	NA	NA	10				
	4800-010201-053	B-43	2	10 U	20 U	10 U	NA	NA	10				
Building 43, 50 and 80 Area	4800-010202-057	B-44	2	10 U	20 U	10 U	NA	NA	10				
	4800-010201-055	B-45	2	10 U	20 U	10 U	NA	NA	10				
	4800-010202-063	B-46	2	10 U	20 U	10 U	NA	NA	10				
	PS-S-14-01	Boring 14	0-2	50 U	50								
Paint Shed/Blast Booth Area	PS-S-10-01	Boring 10	0-2	NA									
	PS-S-11-01	Boring 11	0-2	50 U	50								
	PS-S-12-01	Boring 12	0-2	50 U	50								
	PS-S-13-01	Boring 13	0-2	50 U	50								
Electrical Substations	4800-010226-155	S-7	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-156	S-8	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-157	S-9	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-158	S-10	0.5-1	10 U	20 U	10 U	10 U	10 U	10 U	35	10	NA	45
	4800-010226-159	S-11	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-160	S-12	0.5-1	10 U	20 U	10 U	10 U	10 U	10 U	18	12	NA	30
	4800-010226-161	S-13	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-162	S-14	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-163	S-15	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-164	S-16	0.5-1	10 U	20 U	10 U	NA	NA	10				
	4800-010226-165	S-17	0.5-1	10 U	20 U	10 U	89	NA	94				
	4800-010226-166	S-18	0.5-1	10 U	20 U	10 U	NA	NA	10				

Table 24
Polychlorinated Biphenyl (PCB) Concentrations in Soil (ug/kg) Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs ^b
<i>Toxicity SLV^a</i>				530	NC	NC	NC	1,500	300	200	NC	NC	676
<i>Bioaccumulation SLV^a</i>				420	NC	NC	2	4	10	NC	NC	NC	NC
4800-010226-167	S-19	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-168	S-20	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-169	S-21	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-170	S-22	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-171	S-23	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-172	S-24	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-173	S-25	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-174	S-26	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-175	S-27	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-176	S-28	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-177	S-29	0.5-1		10 U	20 U	10 U	10 U	10 U	10 U	NA	NA	NA	10
4800-010226-178	S-30	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	120	56	NA	176
4800-010226-179	S-31	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	49	29	NA	78
4800-010226-180	S-32	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	69	34	NA	103
4800-010226-181	S-33	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	35	24	NA	59
4800-010226-182	S-34	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	83	41	NA	124
4800-010226-183	S-35	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	66	25	NA	91
4800-010226-184	S-36	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	90	45	NA	135
4800-010226-185	S-37	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	35	18	NA	53
4800-010226-186	S-38	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	62	22	NA	84
4800-010226-187	S-39	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	110	34	NA	144
4800-010226-188	S-40	0.25-0.5		10 U	20 U	10 U	42	NA	47				
4800-010226-189	S-41	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	23	11	NA	34
4800-010226-190	S-42	0.25-0.5		10 U	20 U	10 U	210	NA	215				
4800-010226-191	S-43	0.25-0.5		10 U	20 U	10 U	120	NA	125				
4800-010226-192	S-44	0.25-0.5		10 U	20 U	10 U	NA	10					
4800-010226-193	S-45	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	24	15	NA	39
4800-010226-194	S-46	0.25-0.5		10 U	20 U	10 U	10 U	10 U	10 U	16	12	NA	28
4800-010226-195	S-47	0.25-0.5		10 U	20 U	10 U	NA	10					
PS-S-15-01	Boring 15	0-3		50 U	50								
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	50 U	50								

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

^b Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit for samples with concentrations reported as not detected

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 25
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
Toxicity SLV^a				561	200	200	300	NC	536	1,170	845	2,230	1,520
Bioaccumulation SLV^a				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Former Hazardous Waste													
Storage Area	4800-010129-039	B-48	2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	9.7	6.8 U	12	22
Building 73	4800-010131-049	B-31	2	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	15	6.2 U	72	83
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010202-057	B-44	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	7	5.5 U	16	22
	4800-010202-063	B-46	2	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	8
	PS-S-14-01	Boring 14	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
Buiding 58	4800-010208-098	B-47	2	6.8 U	6.8 U	6.8 U	12	6.8 U	8.5	23	6.8 U	30	31
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	15	73	5.3 U	5.3 U	18	15	230	5.3 U	5.3 U	45
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	PS-S-10-01	Boring 10	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-11-01	Boring 11	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-12-01	Boring 12	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-S-13-01	Boring 13	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electrical Substations	4800-010226-155	S-7	0.5-1	5.8	5.8	5.8	5.8	5.8	5.8	11	5.8	5.8	14
	4800-010226-161	S-13	0.5-1	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	11
	4800-010226-163	S-15	0.5-1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	7.6
	4800-010226-164	S-16	0.5-1	5.3	5.3	5.3	5.3	5.3	5.3	15	5.3	5.3	9.9
	4800-010226-165	S-17	0.5-1	54	54	54	54	54	54	64	54	95	96
	4800-010226-170	S-22	0.5-1	5.9	5.9	5.9	5.9	5.9	5.9	19	5.9	31	26
	4800-010226-175	S-27	0.5-1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	4800-010226-177	S-29	0.5-1	5.3	5.3	5.3	5.3	5.3	5.3	8.9	5.3	5.3	5.3
	4800-010226-181	S-33	0.25-0.5	10	6	5.2 U	15	6.5	11	180	28	460	380
	4800-010226-195	S-47	0.25-0.5	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	7.2	5.3 U	19	23
	PS-S-15-01	Boring 15	0-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 25
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
Toxicity SLV ^a				1,050	1,290	NC	13,000	1,450	100	1,300	300
Bioaccumulation SLV ^a				NC	NC	NC	NC	100	NC	NC	NC
Former Hazardous Waste Storage Area											
4800-010129-039	B-48		2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
4800-010130-043	B-50		2	6.8 U	7.5	6.8 U	6.8 U	8.2	8.7	6.8 U	9.4
Building 73	4800-010131-049	B-31	2	55	72	63	61	61	44	8.5	36
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	7.6	5.6 U	9.5
4800-010202-057	B-44		2	8.1	12	5.5 U	7.2	8.1	7.9	5.5 U	7.6
4800-010202-063	B-46		2	5.8 U	6.6	8.5	7.8	7.9	9.1	5.8 U	9.2
PS-S-14-01	Boring 14		0-2	NA	NA	NA	NA	NA	NA	NA	NA
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
4800-010206-087	B-33		2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
Buiding 58	4800-010208-098	B-47	2	14	25	16	14	15	16	6.8 U	16
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	14	87	5.3 U	5.3 U	9.4	5.3 U	6.3	19
4800-010215-135	B-39		2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
4800-010215-139	B-40		2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
PS-S-10-01	Boring 10		0-2	NA	NA	NA	NA	NA	NA	NA	NA
PS-S-11-01	Boring 11		0-2	NA	NA	NA	NA	NA	NA	NA	NA
PS-S-12-01	Boring 12		0-2	NA	NA	NA	NA	NA	NA	NA	NA
PS-S-13-01	Boring 13		0-2	NA	NA	NA	NA	NA	NA	NA	NA
Electrical Substations	4800-010226-155	S-7	0.5-1	5.8	24	7.9	5.8	5.8	5.8	5.8	13
4800-010226-161	S-13		0.5-1	6.1	49	5.3	5.3	5.3	5.3	5.3	9.7
4800-010226-163	S-15		0.5-1	5.4	12	5.4	5.4	5.4	5.4	5.4	7.8
4800-010226-164	S-16		0.5-1	5.7	34	5.3	5.3	5.3	5.3	5.3	5.3
4800-010226-165	S-17		0.5-1	54	150	75	62	58	55	54	72
4800-010226-170	S-22		0.5-1	17	46	29	31	31	35	9.2	36
4800-010226-175	S-27		0.5-1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
4800-010226-177	S-29		0.5-1	5.3	8.1	5.3	5.3	5.3	5.3	5.3	5.3
4800-010226-181	S-33		0.25-0.5	220	350	320	280	270	250	54	230
4800-010226-195	S-47		0.25-0.5	12	21	24	20	22	28	5.3 U	29
PS-S-15-01	Boring 15		0-3	NA	NA	NA	NA	NA	NA	NA	NA
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	NA	NA	NA	NA	NA	NA	NA	NA

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)												
				Dichlorodifluoromethane (CFC 12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane (CFC 11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Dichloromethane (Methylene Chloride)	Carbon Disulfide	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)
Toxicity SLV ^a	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Bioaccumulation SLV ^a	NC	NC	NC	30	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Former Hazardous Waste Storage Area															
Building 73	4800-010129-039	B-48	2	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	120	7.2 U	7.2 U	30	7.2 U	7.2 U	29 U
	4800-010129-040	B-48	29	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	220	6.5 U	6.5 U	13 U	6.5 U	6.5 U	26 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	260	6.8 U	6.8 U	14 U	6.8 U	6.8 U	27 U
	4800-010130-044	B-50	30	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	210	6.3 U	6.3 U	13 U	6.3 U	6.3 U	25 U
	4800-010130-045	B-51	2	7 U	7 U	7 U	7 U	7 U	490	7 U	7 U	14 U	7 U	7 U	28 U
	4800-010130-046	B-51	30	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	100	7.2 U	7.2 U	14 U	7.2 U	7.2 U	29 U
	4800-010131-051	B-29	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U
	4800-010201-052	B-29	29	7 U	7 U	7 U	7 U	7 U	140	7 U	7 U	14 U	7 U	7 U	28 U
	4800-010131-047	B-30	2	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	58 U	5.8 U	5.8 U	12 U	5.8 U	5.8 U	23 U
	4800-010131-048	B-30	30	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	68 U	6.8 U	6.8 U	14 U	6.8 U	6.8 U	27 U
Building 43, 50 and 80 Area	4800-010131-049	B-31	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	61 U	6.1 U	6.1 U	12 U	6.1 U	6.1 U	24 U
	4800-010131-050	B-31	30	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	140	7.6 U	7.6 U	15 U	7.6 U	7.6 U	30 U
	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	56 U	5.6 U	5.6 U	11 U	5.6 U	5.6 U	22 U
	4800-010202-071	B-42	10	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	73	5.3 U	5.3 U	11 U	5.3 U	5.3 U	21 U
	4800-010201-053	B-43	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U
	4800-010201-054	B-43	29	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U
	4800-010202-057	B-44	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	21 U
	4800-010201-055	B-45	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U	22 U
	4800-010201-056	B-45	29	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	160	6.7 U	6.7 U	13 U	6.7 U	6.7 U	27 U
	4800-010202-063	B-46	2	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	57 U	5.7 U	5.7 U	11 U	5.7 U	5.7 U	23 U
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	54 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U	22 U

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

\cup = not detected

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Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
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Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene	2,100	Trichloroethylene (TCE)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane	
<i>Toxicity SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
<i>Bioaccumulation SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Former Hazardous Waste Storage Area																		
Building 73	4800-010129-039	B-48	2	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	
	4800-010129-040	B-48	29	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010130-044	B-50	30	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
	4800-010130-045	B-51	2	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
	4800-010130-046	B-51	30	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010131-051	B-29	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-052	B-29	29	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
	4800-010131-047	B-30	2	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
	4800-010131-048	B-30	30	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
Building 43, 50 and 80 Area	4800-010131-049	B-31	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010131-050	B-31	30	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U
	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010202-071	B-42	10	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
	4800-010201-053	B-43	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Building 43, 50 and 80 Area	4800-010201-054	B-43	29	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010202-057	B-44	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-055	B-45	2	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010201-056	B-45	29	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010202-063	B-46	2	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

U = not detected

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Box indicates result exceeds SLV.

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
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Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MBK)	1,3-Dichloropropane	Tetrachloroethylene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes
				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxicity SLV^a				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Bioaccumulation SLV^a				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Former Hazardous Waste Storage Area																	
Building 73	4800-010129-039	B-48	2	29 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010129-040	B-48	29	26 U	6.5 U	6.5 U	6.5 U	26 U	6.5 U	6.5 U	6.5 U	26 U	6.5 U	6.5 U	6.5 U	6.5 U	6.5 U
	4800-010130-043	B-50	2	27 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
	4800-010130-044	B-50	30	25 U	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
	4800-010130-045	B-51	2	28 U	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	7 U	7 U	7 U	7 U	7 U
	4800-010130-046	B-51	30	29 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U
	4800-010131-051	B-29	2	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-052	B-29	29	28 U	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	7 U	7 U	7 U	7 U	7 U
	4800-010131-047	B-30	2	23 U	5.8 U	5.8 U	5.8 U	23 U	5.8 U	5.8 U	5.8 U	23 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
	4800-010131-048	B-30	30	27 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
Building 43, 50 and 80 Area	4800-010131-049	B-31	2	24 U	6.1 U	6.1 U	6.1 U	24 U	6.1 U	6.1 U	6.1 U	24 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010131-050	B-31	30	30 U	7.6 U	7.6 U	7.6 U	30 U	7.6 U	7.6 U	7.6 U	30 U	7.6 U	7.6 U	7.6 U	7.6 U	7.6 U
	4800-010202-070	B-42	2	22 U	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
	4800-010202-071	B-42	10	21 U	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
	4800-010201-053	B-43	2	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Building 43, 50 and 80 Area	4800-010201-054	B-43	29	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010202-057	B-44	2	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-058	B-44	13	21 U	5.4 U	5.4 U	5.4 U	21 U	5.4 U	5.4 U	5.4 U	21 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010201-055	B-45	2	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010201-056	B-45	29	27 U	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U
	4800-010202-063	B-46	2	23 U	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010202-065	B-46	13	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
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Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	VOC Concentrations (ug/kg)														
				2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MBK)	1,3-Dichloropropane	Tetrachloroethylene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes	
Toxicity SLV ^a	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Bioaccumulation SLV ^a	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Building 4	4800-010207-090	B-32	2	24 U	6 U	6 U	6 U	24 U	6 U	6 U	24 U	6 U	6 U	6 U	6 U	6 U	6 U	
	4800-010207-092	B-32	30	25 U	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	
	4800-010206-087	B-33	2	26 U	6.6 U	6.6 U	6.6 U	26 U	6.6 U	6.6 U	26 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	
	4800-010206-089	B-33	30	27 U	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	6.7 U	
	4800-010206-084	B-34	7	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	
	4800-010206-085	B-34	14	22 U	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	
	4800-010207-094	B-35	24.5	32 U	8 U	8 U	8 U	32 U	8 U	8 U	32 U	8 U	8 U	8 U	8 U	8 U	8 U	
Paint Shed/Blast Booth Area				23 U	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	
	4800-010219-150	B-37	2	29 U	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	
	4800-010219-151	B-37	30	21 U	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	
	4800-010215-133	B-38	2	28 U	6.9 U	6.9 U	6.9 U	28 U	6.9 U	6.9 U	28 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	
	4800-010215-134	B-38	30	28 U	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	
	4800-010215-135	B-39	2	22 U	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	
	4800-010215-136	B-39	10	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	
	4800-010215-139	B-40	2	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	
	4800-010215-140	B-40	10	22 U	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	
	4800-010219-153	B-41	2	28 U	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	
	4800-010219-154	B-41	27	27 U	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	
Berths 304 and 305	PS-S-12-01	Boring 12	0-2	2,000 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	400 U
	PS-S-12-02	Boring 12	16-18	2,000 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	400 U
	PS-S-16-01	Boring 16	0-2	2,000 U	100 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	400 U
	PS-S-16-02	Boring 16	16-18	2,000 U	100 U	100 U	100 U	2,000 U	100 U	100 U	2,000 U	100 U	100 U	100 U	100 U	100 U	100 U	400 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, Sept

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	c-Xylene	Styrene	Bromoform	Isopropylbenzene	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	n-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene
				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Toxicity SLV ^a				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Bioaccumulation SLV ^a				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Former Hazardous Waste Storage Area																	
Building 73	4800-010129-039	B-48	2	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	29 U
	4800-010129-040	B-48	29	6.5 U	6.5 U	6.5 U	26 U	6.5 U	6.5 U	6.5 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010130-044	B-50	30	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
	4800-010130-045	B-51	2	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010130-046	B-51	30	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	29 U
	4800-010131-051	B-29	2	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-052	B-29	29	7 U	7 U	7 U	28 U	7 U	7 U	7 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010131-047	B-30	2	5.8 U	5.8 U	5.8 U	23 U	5.8 U	5.8 U	5.8 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
	4800-010131-048	B-30	30	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
Building 43, 50 and 80 Area	4800-010131-049	B-31	2	6.1 U	6.1 U	6.1 U	24 U	6.1 U	6.1 U	6.1 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U
	4800-010131-050	B-31	30	7.6 U	7.6 U	7.6 U	30 U	7.6 U	7.6 U	7.6 U	30 U	30 U	30 U	30 U	30 U	30 U	30 U
	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-071	B-42	10	5.3 U	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-053	B-43	2	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-054	B-43	29	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-057	B-44	2	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	21 U	5.4 U	5.4 U	5.4 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-055	B-45	2	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-056	B-45	29	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010202-063	B-46	2	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	<i>c</i> -Xylene	Styrene	Bromoform	Isopropylbenzene	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	i-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene
				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
<i>Toxicity SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
<i>Bioaccumulation SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Building 4	4800-010207-090	B-32	2	6 U	6 U	6 U	24 U	6 U	6 U	6 U	24 U	24 U	24 U	24 U	24 U	24 U	
	4800-010207-092	B-32	30	6.3 U	6.3 U	6.3 U	25 U	6.3 U	6.3 U	6.3 U	25 U	25 U	25 U	25 U	25 U	25 U	
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	26 U	6.6 U	6.6 U	6.6 U	26 U	26 U	26 U	26 U	26 U	26 U	
	4800-010206-089	B-33	30	6.7 U	6.7 U	6.7 U	27 U	6.7 U	6.7 U	6.7 U	27 U	27 U	27 U	27 U	27 U	27 U	
	4800-010206-084	B-34	7	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	
	4800-010206-085	B-34	14	5.6 U	5.6 U	5.6 U	22 U	5.6 U	5.6 U	5.6 U	22 U	22 U	22 U	22 U	22 U	22 U	
	4800-010207-094	B-35	24.5	8 U	8 U	8 U	32 U	8 U	8 U	8 U	32 U	32 U	32 U	32 U	32 U	32 U	
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	5.7 U	5.7 U	5.7 U	23 U	5.7 U	5.7 U	5.7 U	23 U	23 U	23 U	23 U	23 U	23 U	
	4800-010219-151	B-37	30	7.2 U	7.2 U	7.2 U	29 U	7.2 U	7.2 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	
	4800-010215-133	B-38	2	5.8	5.3 U	5.3 U	21 U	5.3 U	5.3 U	5.3 U	21 U	21 U	21 U	21 U	21 U	21 U	
	4800-010215-134	B-38	30	6.9 U	6.9 U	6.9 U	28 U	6.9 U	6.9 U	6.9 U	28 U	28 U	28 U	28 U	28 U	28 U	
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	28 U	28 U	28 U	28 U	28 U	28 U	
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	22 U	5.5 U	5.5 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	
	4800-010215-140	B-40	10	5.4 U	5.4 U	5.4 U	22 U	5.4 U	5.4 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	
	4800-010219-153	B-41	2	7.1 U	7.1 U	7.1 U	28 U	7.1 U	7.1 U	7.1 U	28 U	28 U	28 U	28 U	28 U	28 U	
	4800-010219-154	B-41	27	6.8 U	6.8 U	6.8 U	27 U	6.8 U	6.8 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	
	PS-S-12-01	Boring 12	0-2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
	PS-S-12-02	Boring 12	16-18	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
Berths 304 and 305	PS-S-16-01	Boring 16	0-2	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	
	PS-S-16-02	Boring 16	16-18	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, Sept

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	1,3-Dichlorobenzene	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	Naphthalene	Hexachlorobutadiene
<i>Toxicity SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Bioaccumulation SLV^a</i>				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Former Hazardous Waste Storage Area													
Building 73	4800-010129-039	B-48	2	7.2 U	29 U	7.2 U	29 U	7.2 U	29 U	29 U	29 U	29 U	29 U
	4800-010129-040	B-48	29	6.5 U	26 U	6.5 U	26 U	6.5 U	26 U	26 U	26 U	26 U	26 U
	4800-010130-043	B-50	2	6.8 U	27 U	6.8 U	27 U	6.8 U	27 U	27 U	27 U	27 U	27 U
	4800-010130-044	B-50	30	6.3 U	25 U	6.3 U	25 U	6.3 U	25 U	25 U	25 U	25 U	25 U
	4800-010130-045	B-51	2	7 U	28 U	7 U	28 U	7 U	28 U	28 U	28 U	28 U	28 U
	4800-010130-046	B-51	30	7.2 U	29 U	7.2 U	29 U	7.2 U	29 U	29 U	29 U	29 U	29 U
	4800-010131-051	B-29	2	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-052	B-29	29	7 U	28 U	7 U	28 U	7 U	28 U	28 U	28 U	28 U	28 U
	4800-010131-047	B-30	2	5.8 U	23 U	5.8 U	23 U	5.8 U	23 U	23 U	23 U	23 U	23 U
	4800-010131-048	B-30	30	6.8 U	27 U	6.8 U	27 U	6.8 U	27 U	27 U	27 U	27 U	27 U
	4800-010131-049	B-31	2	6.1 U	24 U	6.1 U	24 U	6.1 U	24 U	24 U	24 U	24 U	24 U
	4800-010131-050	B-31	30	7.6 U	30 U	7.6 U	30 U	7.6 U	30 U	30 U	30 U	30 U	30 U
Building 43, 50 and 80 Area				5.6 U	22 U	5.6 U	22 U	5.6 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-070	B-42	2	5.3 U	21 U	5.3 U	21 U	5.3 U	21 U	21 U	21 U	21 U	21 U
	4800-010202-071	B-42	10	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-053	B-43	2	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-054	B-43	29	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-057	B-44	2	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U
	4800-010202-058	B-44	13	5.4 U	21 U	5.4 U	21 U	5.4 U	21 U	21 U	21 U	21 U	21 U
	4800-010201-055	B-45	2	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U
	4800-010201-056	B-45	29	6.7 U	27 U	6.7 U	27 U	6.7 U	27 U	27 U	27 U	27 U	27 U
	4800-010202-063	B-46	2	5.7 U	23 U	5.7 U	23 U	5.7 U	23 U	23 U	23 U	23 U	23 U
	4800-010202-065	B-46	13	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U

Table 26
Volatile Organic Compound (VOC) Concentrations in Soil (ug/kg)
Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)												
				1,3-Dichlorobenzene	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	1,2,3-Trichlorobenzene	Naphthalene	Hexachlorobutadiene		
Toxicity SLV ^a	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Bioaccumulation SLV ^a	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Building 4	4800-010207-090	B-32	2	6 U	24 U	6 U	24 U	6 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U
	4800-010207-092	B-32	30	6.3 U	25 U	6.3 U	25 U	6.3 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
	4800-010206-087	B-33	2	6.6 U	26 U	6.6 U	26 U	6.6 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
	4800-010206-089	B-33	30	6.7 U	27 U	6.7 U	27 U	6.7 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010206-084	B-34	7	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010206-085	B-34	14	5.6 U	22 U	5.6 U	22 U	5.6 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010207-094	B-35	24.5	8 U	32 U	8 U	32 U	8 U	32 U	32 U	32 U	32 U	32 U	32 U	32 U
Paint Shed/Blast Booth Area				5.7 U	23 U	5.7 U	23 U	5.7 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
	4800-010219-150	B-37	2	7.2 U	29 U	7.2 U	29 U	7.2 U	29 U	29 U	29 U	29 U	29 U	29 U	29 U
	4800-010219-151	B-37	30	5.3 U	21 U	5.3 U	21 U	5.3 U	21 U	21 U	21 U	21 U	21 U	21 U	21 U
	4800-010215-133	B-38	2	6.9 U	28 U	6.9 U	28 U	6.9 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010215-134	B-38	30	7.1 U	28 U	7.1 U	28 U	7.1 U	28 U	28 U	28 U	28 U	28 U	28 U	28 U
	4800-010215-135	B-39	2	5.5 U	22 U	5.5 U	22 U	5.5 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-136	B-39	10	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-139	B-40	2	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010215-140	B-40	10	5.4 U	22 U	5.4 U	22 U	5.4 U	22 U	22 U	22 U	22 U	22 U	22 U	22 U
	4800-010219-153	B-41	2	6.8 U	27 U	6.8 U	27 U	6.8 U	27 U	27 U	27 U	27 U	27 U	27 U	27 U
	4800-010219-154	B-41	27	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U	100 U	100 U
Berths 304 and 305	PS-S-12-01	Boring 12	0-2	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-12-02	Boring 12	16-18	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-16-01	Boring 16	0-2	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U	100 U	100 U
	PS-S-16-02	Boring 16	16-18	100 U	NA	100 U	100 U	100 U	1,000 U	100 U	100 U	100 U	100 U	100 U	100 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, Sept

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 27
BTEX Concentrations in Soil (mg/kg) Compared to Soil/Catch Basin Screening Levels
Main Shipyard Area
SIUF OU1 Phase II RI Work Plan Addendum

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene
<i>Toxicity SLV^a</i>				NC	NC	NC	NC	NC
<i>Bioaccumulation SLV^a</i>				3.92	5	NC	NC	NC
Building 58	4800-010208-098	B-47	2	0.069 U	0.14 U	0.14 U	0.14 U	0.14 U
	4800-010208-099	B-47	29	0.07 U	0.14 U	0.14 U	0.14 U	0.14 U
Electrical Substations	4800-010226-155	S-7	0.5-1	0.059 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010226-161	S-13	0.5-1	0.052 U	0.1 U	0.1 U	0.1 U	0.1 U
	4800-010226-163	S-15	0.5-1	0.055 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-164	S-16	0.5-1	0.052 U	0.1 U	0.1 U	0.1 U	0.1 U
	4800-010226-165	S-17	0.5-1	0.054 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-170	S-22	0.5-1	0.058 U	0.12 U	0.12 U	0.12 U	0.12 U
	4800-010226-175	S-27	0.5-1	0.054 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-177	S-29	0.5-1	0.053 U	0.11 U	0.11 U	0.11 U	0.11 U
	4800-010226-181	S-33	0.25-0.5	0.052 U	0.1 U	0.1 U	0.1 U	0.1 U
	4800-010226-195	S-47	0.25-0.5	0.053 U	0.11 U	0.11 U	0.11 U	0.11 U

U = not detected

^a Table 3-1(9/1/05 revision) Interim Final Portland Harbor Joint Source Control Strategy, September 2005

NA = not analyzed

NC = no screening level

Box indicates result exceeds SLV.

Table 1
Summary of Water Level Measurements and Elevations
2007 Annual Groundwater Sampling
Swan Island Upland Facility Remedial Investigation

Relative Elevation of Top of Casing

Survey Date	Elevation of Top of Casing										
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11
10/18/01	33.01	33.02	32.80	32.69	32.77	32.78	32.62	33.38	33.62	31.69	35.46

Measured Water Level

Date Measured	Measured By:	Measured Water Level (feet btc)										
		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11
12/18/01	HAI	22.89	22.60	22.25	21.80	22.22	22.45	22.13	19.20	21.18	22.57	24.83
3/26/02	HAI	27.31	22.58	27.59	21.31	27.57	27.59	27.58	18.67	21.11	25.81	30.45
7/1/02	HAI	22.21	21.46	21.99	20.72	22.64	22.48	22.46	18.13	20.26	21.14	24.82
10/7/02	HAI	29.95	22.51	29.79	21.27	29.75	29.46	29.47	18.75	20.84	27.68	31.45
3/26/03	HAI	24.65	21.95	24.32	20.99	24.45	24.35	24.30	18.51	20.84	23.29	27.04
9/22/03	HAI	30.87	22.24	30.61	21.05	30.44	30.02	30.03	18.55	20.64	28.31	32.07
12/1/03	HAI	27.07	22.47	26.82	21.39	26.68	26.69	26.55	18.65	20.78	26.03	29.73
1/4/05 ¹	HAI	26.51	22.23	26.19	21.16	26.29	26.09	26.23	18.08	20.72	25.70	29.69
10/12/05	BBL	30.11	22.38	30.00	21.15	29.88	29.47	29.60	18.49	20.94	27.52	31.45
12/13/05	HAI	28.42	22.25	27.92	21.14	28.02	27.89	27.90	18.57	21.05	26.40	30.30
9/26/06	ACA	28.78	21.31	28.68	19.97	28.83	28.46	28.73	17.89	19.71	27.60	31.43
12/19/06	ACA	23.92	21.12	23.31	20.00	23.75	23.45	23.56	18.00	19.22	22.53	26.21
9/21/07	ACA	30.24	21.57	30.13	20.31	29.95	NM	29.66	18.09	19.13	28.18	31.95
12/17/07	ACA	26.38	21.80	25.86	20.56	26.11	NM	26.35	18.34	19.65	25.45	29.62

Table 1
Summary of Water Level Measurements and Elevations
2007 Annual Groundwater Sampling
Swan Island Upland Facility Remedial Investigation

Elevation Data

Date Measured	Groundwater Elevation (feet) ²											Willamette River Elevation (feet) ³
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	
12/18/01	10.12	10.42	10.55	10.89	10.55	10.33	10.49	14.18	12.44	9.12	10.63	11.1
3/26/02	5.70	10.44	5.21	11.38	5.20	5.19	5.04	14.71	12.51	5.88	5.01	5.5
7/1/02	10.80	11.56	10.81	11.97	10.13	10.30	10.16	15.25	13.36	10.55	10.64	10.1
10/7/02	5.94	10.55	5.98	11.30	6.09	6.09	6.07	14.73	12.84	5.66	5.73	5.5
3/26/03	8.36	11.07	8.48	11.70	8.32	8.43	8.32	14.87	12.78	8.40	8.42	8.3
9/22/03	2.14	10.78	2.19	11.64	2.33	2.76	2.59	14.83	12.98	3.38	3.39	2.3
12/1/03	5.94	10.55	5.98	11.30	6.09	6.09	6.07	14.73	12.84	5.66	5.73	6.1
1/4/05	6.50	10.79	6.61	11.53	6.48	6.69	6.39	15.30	12.90	5.99	5.77	5.6
10/12/05	2.90	10.64	2.80	11.54	2.89	3.31	3.02	14.89	12.68	4.17	4.01	2.6
12/13/05	4.59	10.77	4.88	11.55	4.75	4.89	4.72	14.81	12.57	5.29	5.16	4.8
9/26/06	4.23	11.71	4.12	12.72	3.94	4.32	3.89	15.49	13.91	4.09	4.03	3.7
12/19/06	9.09	11.90	9.49	12.69	9.02	9.33	9.06	15.38	14.40	9.16	9.25	9.1
9/21/07	2.77	11.45	2.67	12.38	2.82	NM	2.96	15.29	14.49	3.51	3.51	2.4
12/17/07	6.63	11.22	6.94	12.13	6.66	NM	6.27	15.04	13.97	6.24	5.84	7.4
Screen Elevation:	Top ->	13.01	13.02	12.80	12.69	12.76	12.78	12.62	13.38	13.62	11.69	15.46
	Bottom ->	-1.99	-1.98	-2.20	-2.31	-2.24	-2.22	-2.38	-1.62	-1.38	-3.31	0.46

Note: btc - below top of casing

HAI = Hahn and Associates, Inc.

BBL = Blasland Bouck and Lee

ACA = Ash Creek Associates

¹ 2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

² City of Portland benchmark #1585 (adjusted to NGVD 29 with 1947 adjustment by surveyor)

³ Willamette River at the Morrison Bridge elevation data based on U.S.G.S. NGVD 29

Shade = groundwater elevation above screen interval

NM = Not measured

Table 2
2007 Annual Groundwater Sampling Results
Total Metal Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Antimony, Total	Arsenic, Total	Cadmium, Total	Chromium, Total ^d	Copper, Total	Lead, Total	Mercury, Total	Nickel, Total	Silver, Total	Zinc, Total
<i>Human Health Consumption AWQC^a</i>					640	0.14	NC	NC	NC	NC	0.3	4,600	NC	26,000
<i>Freshwater AWQC^b</i>					NC	150	0.25	74	9	2.5	0.77	52	NC	120
<i>SLV^c</i>					1,600	150	2.2	74	9	2.5	0.77	52	0.12	120
BWTP and Building 72 Area														
MW-1	12/18/01	4800-011218-253			0.2 U	9.9	0.68	117	240	46.7	0.2 U	88.6	0.27	233
	3/26/02	4800-020326-265			0.1 U	5.1	0.32	44.5	90.7	16.4	0.55	38.9	0.22	106
	7/1/02	4800-020701-281			0.1 U	13.4	0.1 U	10.0	24.2	5.96	0.2 U	37.4	0.07	21.2
	10/8/02	4800-021008-296			0.1 U	5.8	0.35	37.1	74.5	15.7	0.2 U	39.3	0.13	76.8
	12/2/03	4800-031202-412		X	0.1 U	9.8	0.14	1.1	1.7 N	0.14	0.2 U	17.6	0.04 U	1.1
	12/2/03	4800-031202-412			0.1 U	10.5	0.17	0.7	2.2 N	0.11	0.2 U	19.1	0.04 U	1.2
	1/5/05 ^e	6527-050105-421			0.05 U	9.8	0.05	0.5	1.4	0.10	0.2 U	17.2	0.02 U	1.4
	1/5/05 ^e	6527-050105-421		X	0.05 U	9.4	0.06	0.5	2.5	0.13	0.2 U	17.6	0.02 U	2.2
	12/13/05	6527-051213-431			0.05 U	15.3	0.18	1.3	1.9	0.19	0.2 U	18.4	0.03	2.3
	12/13/05	6527-051213-431		X	0.05 U	16	0.14	0.9	1.5	0.11	0.2 U	18.6	0.02 U	2.1
	12/22/06	MW-1			0.04 U	7.95	0.041	2.57	9.05	2.49	0.02 B	28.0	0.027	6.9
	12/22/06	MW-1 DUP		X	0.04 U	8.24	0.033	2.38	7.59	1.98	0.02 B	29.0	0.018 B	5.5
	2/8/07	MW-1			0.08	9.9	0.03	3.6	5.5	1.30	0.2 U	42.7	0.08	4.3
	12/27/07	MW-1			0.05	12.1	0.06	2.5	5.9	1.47	0.02 U	34.8	0.02	6.5
	12/27/07	MW-1 DUP		X	0.05 U	12.5	0.04	2.6	4.8	1.22	0.02 U	34.0	0.02 U	6.1
MW-2	12/18/01	4800-011218-256			0.2 U	6.3	0.32	28.5	44.3	11.1	0.2 U	44.6	0.1	68.1
	12/18/01	4800-011218-256		X	0.1 U	3.2	0.17	16.2	25.9	6.82	0.2 U	23.3	0.05	36.7
	3/26/02	4800-020326-266			0.05 U	3.4	0.05 U	2.1	2.6	0.79	0.2 U	18.8	0.04	3.3
	7/1/02	4800-020701-282			0.05 U	11.8	0.05 U	1.3	1.3	0.16	0.2 U	15.5	0.02 U	5.2
	7/1/02	4800-020701-282-DUP		X	0.05 U	12.3	0.05 U	1.3	0.4	0.15	0.2 U	14.6	0.02 U	0.9
	10/8/02	4800-021008-297			0.1 U	2.8	0.1 U	4.6	8.3	3.46	0.2 U	23.3	0.04 U	10.4
MW-3	12/18/01	4800-011218-255			0.1 U	3.0	0.19	6.3	8.6	1.81	0.2 U	11.3	0.03	13.6
	3/27/02	4800-020327-267			0.25 U	16.4	0.49	74.3	109	27.1	0.23	88.4	0.35	217
	7/2/02	4800-020702-283			0.1 U	6.2	0.12	7.7	15.0	3.78	0.2 U	9.6	0.04 U	21.2
	10/8/02	4800-021008-298			0.1 U	7.1	0.14	9.2	15.7	3.83	0.2 U	11.8	0.04	22.7
	3/26/03	4800-030326-402			0.05 U	2.5	0.05 U	6.2	0.5	0.09	0.2 U	5.2	0.02 U	28.0
	12/2/03	4800-031202-411			0.1	9.7	0.21	1.6	2.08 N	0.36	0.2 U	8.5	0.04 U	2.0
	1/5/05 ^e	6527-050105-422			0.05 U	10	0.07	0.7	1.9	0.29	0.2 U	5.9	0.02 U	2.0
	12/14/05	6527-051214-433			0.05 U	10.3	0.17	0.6	0.9	0.08	0.2 U	5	0.02 U	0.9
	12/22/06	MW-3			0.04 U	6.05	0.008 B	0.34	0.5	0.063	0.02 U	1.99	0.034	2.2
	12/27/07	MW-3			0.05 U	5.7	0.02 U	0.6	0.7	0.14	0.02 U	1.6	0.02 U	2.8
MW-4	12/18/01	4800-011218-254			0.1 U	5.3	0.05 U	3.7	3.3	0.81	0.2 U	6.4	0.02 U	6.2
	3/27/02	4800-020327-268			0.05 U	2.2	0.05 U	0.5	0.3	0.1	0.2 U	5.8	0.02 U	0.8
	7/2/02	4800-020702-284			0.05 U	2.4	0.05 U	0.5	0.4	0.04	0.2 U	5.4	0.02 U	1.0
	10/8/02	4800-021008-299			0.05 U	2.2	0.05 U	0.3	0.5	0.1	0.2 U	5.3	0.02 U	0.9
	3/26/03	4800-030326-403-upper			0.05 U	0.5 U	0.05 U	0.8	0.5	0.02 U	0.2 U	5.3	0.02 U	17.6
	3/26/03	4800-030326-404-upper		X	0.05 U	0.5 U	0.05 U	0.7	0.5	0.02 U	0.2 U	5.1	0.02 U	16.3
	3/26/03	4800-030326-405-lower			0.05 U	2.1	0.05 U	1.1	0.4	0.05	0.2 U	5.7	0.02 U	1.9

Table 2
2007 Annual Groundwater Sampling Results
Total Metal Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Antimony, Total	Arsenic, Total	Cadmium, Total	Chromium, Total ^d	Copper, Total	Lead, Total	Mercury, Total	Nickel, Total	Silver, Total	Zinc, Total
<i>Human Health Consumption AWQC^a</i>					640	0.14	NC	NC	NC	NC	0.3	4,600	NC	26,000
<i>Freshwater AWQC^b</i>					NC	150	0.25	74	9	2.5	0.77	52	NC	120
<i>SLV^c</i>					1,600	150	2.2	74	9	2.5	0.77	52	0.12	120
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01 3/27/02 7/2/02 10/8/02	4800-011218-257 4800-020327-269 4800-020702-285 4800-021008-300		0.1 U 0.05 U 0.05 U 0.11	0.5 U 2.3 1.1 4.2	0.18 0.05 U 0.05 U 0.1 U	2.7 3.4 2.1 6.3	2.6 3.4 1.8 8.3	0.24 0.84 0.32 2.07	0.2 U 0.2 U 0.2 U 0.2 U	5.4 5.2 4.4 8.5	0.02 U 0.05 0.02 U 0.04 U	8.0 5.9 2.4 14.3
	MW-6	12/18/01 3/27/02 7/2/02 10/8/02 12/3/03 1/6/05 ^e 12/14/05 12/21/06 12/26/07	4800-011218-258 4800-020327-270 4800-020702-286 4800-021008-301 4800-031203-414 6527-050106-424 6527-051214-436 MW-6 MW-6		0.2 U 0.33 0.1 U 0.1 U 0.1 U 0.05 U 0.05 U 0.04 U 0.05 U	2.5 6.4 2.0 2.2 1 U 0.5 U 0.5 U 0.11 B 0.5 U	0.17 0.25 0.1 U 0.1 U 0.13 0.02 U 0.06 0.017 B 0.02 U	14.2 26.0 12.9 12.9 0.7 0.2 U 0.4 0.17 B 0.2	17.9 27.8 14.9 14.5 1.42 N 2.8 0.7 0.48 0.2	3.27 7.07 4.41 4.25 0.05 0.16 0.1 0.048 0.07	0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.02 U 0.02 U	18.5 86.9 22.2 18.2 5.1 3.3 5.7 2.72 2.1	0.04 U 0.36 0.04 U 0.04 U 0.04 U 0.02 U 0.02 U 0.004 U 0.02 U	30.1 55.7 28.2 28.9 1.4 6.5 1.5 2.4 4.2
	MW-7	12/18/01 3/28/02 3/28/02 7/2/02 10/9/02 3/27/03 12/4/03 1/6/05 ^e 12/15/05 12/21/06 2/8/07 12/26/07	4800-011218-259 4800-020328-272 4800-020328-273 4800-020702-287 4800-021009-303 4800-030327-406 4800-031204-417 6527-050106-425 6527-051215-437 MW-7 MW-7 MW-7	X	0.2 U 0.25 U 0.25 U 0.1 U 0.1 U 0.05 U 0.1 U 0.05 U 0.05 U 0.04 U 0.05 U 0.05 U	2.4 17.2 14.6 6.6 6.0 6.7 4.5 4.9 3.5 3.54 5.4 1.9	0.2 0.25 U 0.25 U 0.1 U 0.1 U 0.05 U 0.2 0.04 0.11 0.892 0.03 0.03	8.4 46.9 26.4 8.4 6.0 1.4 0.6 0.2 U 0.9 20.6 1.2 0.4	9.2 60.1 32.8 11.5 8.6 1.4 2.1 N 0.7 0.9 53.9 11.3 0.9	1.63 14.6 7.48 2.99 1.67 0.02 U 0.08 0.1 0.23 11.3	0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.09 B 0.08 0.11	14.8 55.1 35.1 12.1 10.7 3.1 12.2 4.5 7.1 21.8 8.4 0.02 U	0.04 U 0.21 0.16 0.04 U 0.04 U 0.02 U 0.04 U 0.02 U 0.02 U 0.048 0.03 0.02 U	15.6 119 67.4 18.7 12.2 0.6 1.5 1.0 1.9 49.2 1.0 3.3
Building 4 Area	MW-8	12/19/01 3/28/02 7/3/02 10/9/02 10/9/02 3/27/03 3/27/03	4800-011219-263 4800-020328-274 4800-0207-03-290 4800-021009-304 4800-021009-305 4800-030327-407-upper 4800-030327-408-lower		0.1 U 0.05 U 0.05 U 0.05 U 0.05 U 0.05 U 0.05 U	29.6 23.1 15.5 14.9 15.2 6.3 10.2	0.05 U 0.07 0.05 U 0.05 U 0.05 U 0.05 U 0.05 U	4.4 0.8 0.4 0.5 0.4 2.4 0.8	2.0 0.2 0.4 0.4 0.5 0.5 0.3	0.48 0.05 0.16 0.08 0.09 0.07 0.02 U	0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U 0.2 U	3.9 3.7 3.4 3.3 3.4 7.9 5.9	0.02 U 0.02 U 0.02 U 0.02 U 0.02 U 0.02 U 0.02 U	3.5 0.9 1.0 0.7 0.8 0.8 0.6
	MW-9	12/19/01 3/28/02 7/3/02 10/9/02	4800-011219-262 4800-020328-275 4800-0207-03-291 4800-021009-306		0.2 U 0.05 U 0.05 U 0.05 U	22.3 20.6 22.3 18.4	0.17 0.05 U 0.05 U 0.05 U	10.1 2.7 4.9 1.0	11.4 0.9 1.9 1.4	2.22 0.18 0.4 0.35	0.2 U 0.2 U 0.2 U 0.2 U	10.7 7.4 10.1 4.1	0.04 0.02 U 0.02 U 0.02 U	15.6 2.6 2.1 1.9
Building 43, 50 and 80 Area	MW-10	12/19/01 3/28/02 7/3/02 10/9/02	4800-011219-261 4800-020328-276 4800-0207-03-292 4800-021009-307		0.2 U 0.05 U 0.05 U 0.05 U	21.7 9.4 9.7 16.6	0.18 0.05 U 0.05 U 0.05 U	13.0 2.2 0.6 0.4	15.6 0.31 0.1 0.4	4.51 0.2 U 0.2 U 0.2 U	12.3 5.5 2.8 1.6	0.06 0.02 U 0.02 U 0.02 U	25.1 2.4 1.1 1.0	

Table 2
2007 Annual Groundwater Sampling Results
Total Metal Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Antimony, Total	Arsenic, Total	Cadmium, Total	Chromium, Total ^d	Copper, Total	Lead, Total	Mercury, Total	Nickel, Total	Silver, Total	Zinc, Total
<i>Human Health Consumption AWQC^a</i>					640	0.14	NC	NC	NC	NC	0.3	4,600	NC	26,000
<i>Freshwater AWQC^b</i>					NC	150	0.25	74	9	2.5	0.77	52	NC	120
<i>SLV^c</i>					1,600	150	2.2	74	9	2.5	0.77	52	0.12	120

U = not detected

N = matrix spike was outside control criteria

B = result is an estimated concentration that is less than the MRL but greater than or equal to the MDL

EB = equipment blank

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^cDEQ Level II Screening Level Values (SLVs), December 2001.

^dAWQC and SLV for Chromium III.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC = no criteria or screening level

Shading indicates sampling result exceeds protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Dichlorodifluoromethane (CFC-12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane (CFC-11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Carbon Disulfide	Dichloromethane (Methylene Chloride)	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)
<i>Human Health Consumption AWQC^a</i>					NC	NC	2.4	NC	NC	NC	NC	7,100	NC	590	10,000	NC
<i>Risk-Based Concentration^b</i>					NC	NC	870	NC	NC	NC	NC	330,000	NC	NC	330,000	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					NC	NC	NC	NC	NC	NC	1,500	25	0.92	2,200	590	47
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/26/02	4800-020326-265		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/1/02	4800-020701-281		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/8/02	4800-021008-296		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/26/02	4800-020326-266		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/1/02	4800-020701-282		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/8/02	4800-021008-297		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.2 J	
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/27/02	4800-020327-267		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/2/02	4800-020702-283		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/8/02	4800-021008-298		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
	MW-4	12/18/01	4800-011218-254		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/27/02	4800-020327-268		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	1.2	0.5 U	2 U	0.5 U	0.64	
		7/2/02	4800-020702-284		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.65	0.5 U	2 U	0.5 U	0.5 U	
		10/8/02	4800-021008-299		0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	20 U	1.1	0.5 U	2 U	0.26 J	0.63	
		3/26/03	4800-030326-403-upper		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.65	0.5 U	2 U	0.5 U	0.5 U	
		3/36/03	4800-030326-404-upper	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.61	0.5 U	2 U	0.5 U	0.5 U	
		3/26/03	4800-030326-405-lower		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	1.0	0.5 U	2 U	0.5 U	0.5 U	
		12/3/03	4800-031203-415		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.54	0.5 U	2 U	0.5 U	0.5 U	
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.57	1.4	2 U	0.5 U	0.5 U	
		1/5/05 ^e	6527-050105-423		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		1/5/05 ^e	6527-050105-423	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/14/05	6527-051214-435		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/21/06	MW-4		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/21/06	MW-4 DUP	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/27/07	MW-4		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/27/07	MW-4 DUP	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/27/02	4800-020327-269		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/2/02	4800-020702-285		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/8/02	4800-021008-300		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/27/02	4800-020327-270		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/2/02	4800-020702-286		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/8/02	4800-021008-301		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/28/02	4800-020328-272		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		3/28/02	4800-020328-273</													

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Dichlorodifluoromethane (CFC-12)	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane (CFC-11)	Acetone	1,1-Dichloroethene (1,1-DCE)	Carbon Disulfide	Dichloromethane (Methylene Chloride)	trans-1,2-Dichloroethene	1,1-Dichloroethane (1,1-DCA)
<i>Human Health Consumption AWQC^a</i>					NC	NC	2.4	NC	NC	NC	NC	7,100	NC	590	10,000	NC
<i>Risk-Based Concentration^b</i>					NC	NC	870	NC	NC	NC	NC	330,000	NC	NC	330,000	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					NC	NC	NC	NC	NC	NC	1,500	25	0.92	2,200	590	47
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/28/02	4800-020328-274		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/9/02	4800-021009-304		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/9/02	4800-021009-305	X	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	0.5 U	0.5 U	0.85	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	0.5 U	0.5 U	0.88	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	0.5 U	0.5 U	0.91	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	0.5 U	0.5 U	0.45 J	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U
	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	
		3/28/02	4800-020328-276		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		10/9/02	4800-021009-307		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	
		12/21/06	MW-10		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	2-Butanone (MEK)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene
<i>Human Health Consumption AWQC^a</i>					NC	NC	NC	NC	NC	NC	NC	1.6	37	51
<i>Risk-Based Concentration^b</i>					NC	NC	410,000	NC	NC	6,200,000	NC	NC	3,600	2,700
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					14,000	NC	590	1,240	NC	11	NC	74	20,000	130
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/02	4800-020326-265		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/1/02	4800-020701-281		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-296		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-2	12/18/01	4800-011218-256		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/18/01	4800-011218-256	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/02	4800-020326-266		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/1/02	4800-020701-282		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/1/02	4800-020701-282-DUP	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-297		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-3	12/18/01	4800-011218-255		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-267		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-283		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-298		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-4	12/18/01	4800-011218-254		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-268		20 U	0.5 U	1.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-284		20 U	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-299		20 U	0.5 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J
		3/26/03	4800-030326-403-upper		20 U	0.5 U	0.79	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/36/03	4800-030326-404-upper	X	20 U	0.5 U	0.79	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/26/03	4800-030326-405-lower		20 U	0.5 U	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/3/03	4800-031203-415		20 U	0.5 U	0.93	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/3/03	4800-031203-415	X	20 U	0.5 U	0.98	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1/5/05 ^e	6527-050105-423		20 U	0.5 U	0.63	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		1/5/05 ^e	6527-050105-423	X	20 U	0.5 U	0.64	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/14/05	6527-051214-435		20 U	0.5 U	0.51	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/14/05	6527-051214-435	X	20 U	0.5 U	0.50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/21/06	MW-4		20 U	0.5 U	0.19 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/21/06	MW-4 DUP	X	20 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/27/07	MW-4		20 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/27/07	MW-4 DUP	X	20 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-269		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-285		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-300		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-6	12/18/01	4800-011218-258		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/27/02	4800-020327-270		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-286		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/8/02	4800-021008-301		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-7	12/18/01	4800-011218-259		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-272		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-273	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/2/02	4800-020702-287		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-303		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.12 J

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	2-Butanone (MEK)	2,2-Dichloropropane	cis-1,2-Dichloroethene	Chloroform	Bromochloromethane	1,1,1-Trichloroethane (TCA)	1,1-Dichloropropene	Carbon Tetrachloride	1,2-Dichloroethane (EDC)	Benzene
<i>Human Health Consumption AWQC^a</i>					NC	NC	NC	NC	NC	NC	NC	1.6	37	51
<i>Risk-Based Concentration^b</i>					NC	NC	410,000	NC	NC	6,200,000	NC	NC	3,600	2,700
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					14,000	NC	590	1,240	NC	11	NC	74	20,000	130
Building 4 Area	MW-8	12/19/01	4800-011219-263		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-274		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-290		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-304		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-305	X	20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	MW-9	12/19/01	4800-011219-262		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.3	0.5 U
		3/28/02	4800-020328-275		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.7	0.5 U
		7/3/02	4800-0207-03-291		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.5	0.5 U
		10/9/02	4800-021009-306		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.1	0.5 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		3/28/02	4800-020328-276		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		7/3/02	4800-0207-03-292		20 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		10/9/02	4800-021009-307		20 U	0.5 U	0.18 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
		12/21/06	MW-10		20 U	0.5 U	0.13 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Trichloroethene (TCE)	1,2-Dichloropropane	Bromodichloromethane	Dibromomethane	2-Hexanone	cis-1,3-Dichloropropene	Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	4-Methyl-2-pentanone (MIBK)	1,3-Dichloropropane
<i>Human Health Consumption AWQC^a</i>					30	15	NC	NC	NC	NC	15,000	NC	16	NC	NC
<i>Risk-Based Concentration^b</i>					110	NC	NC	NC	NC	NC	3,100,000	NC	NC	NC	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					21,900	5,700	NC	NC	99	NC	9.8	NC	9,400	170	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/02	4800-020326-265		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/1/02	4800-020701-281		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-296		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/02	4800-020326-266		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/1/02	4800-020701-282		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-297		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-267		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-283		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-298		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
	MW-4	12/18/01	4800-011218-254		270	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-268		160	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-284		91	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-299		120	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/03	4800-030326-403-upper		53 D	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/36/03	4800-030326-404-upper	X	53 D	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/26/03	4800-030326-405-lower		82 D	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/3/03	4800-031203-415		54	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/3/03	4800-031203-415	X	56	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		1/5/05 ^e	6527-050105-423		31	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		1/5/05 ^e	6527-050105-423	X	30	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/14/05	6527-051214-435		15	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/14/05	6527-051214-435	X	15	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/21/06	MW-4		4.8	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/21/06	MW-4 DUP	X	5.1	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/27/07	MW-4		3.9	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/27/07	MW-4 DUP	X	4.0	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-269		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-285		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-300		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.29 J	0.5 U	0.5 U	0.5 U	
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/27/02	4800-020327-270		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-286		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/8/02	4800-021008-301		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-272		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/2/02	4800-020702-287		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/9/02	4800-021009-303		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.44 J	0.5 U	0.5 U	20 U	0.5 U

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<i>Human Health Consumption AWQC^a</i>					30	15	NC	NC	NC	NC	15,000	NC	16	NC	NC
<i>Risk-Based Concentration^b</i>					110	NC	NC	NC	NC	NC	3,100,000	NC	NC	NC	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					21,900	5,700	NC	NC	99	NC	9.8	NC	9,400	170	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-274		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/9/02	4800-021009-304		0.12 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.13 J	0.5 U	20 U	0.5 U	
		10/9/02	4800-021009-305	X	0.12 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.12 J	0.5 U	20 U	0.5 U	
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-275		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		10/9/02	4800-021009-306		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		3/28/02	4800-020328-276		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.9	0.5 U	0.5 U	20 U	0.5 U
		10/9/02	4800-021009-307		0.14 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	
		12/21/06	MW-10		0.41 J	0.5 U	0.5 U	0.5 U	20 U	0.5 U	0.5 U	0.5 U	20 U	0.5 U	

U = not detected

EB = equipment blank

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^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

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^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Tetrachloroethene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Styrene	Bromoform	Isopropylbenzene
<i>Human Health Consumption AWQC^a</i>					3.3	NC	NC	1,600	NC	2,100	NC	NC	NC	140	NC
<i>Risk-Based Concentration^b</i>					1,300	NC	690	NC	NC	6,400,000	710,000	710,000	NC	NC	1,500,000
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					840	NC	NC	50	186	7.3	1.8	NC	NC	NC	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/02	4800-020326-265		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/1/02	4800-020701-281		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-296		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/02	4800-020326-266		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/1/02	4800-020701-282		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-297		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-267		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-283		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-298		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-4	12/18/01	4800-011218-254		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-268		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-284		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-299		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/03	4800-030326-403-upper		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/36/03	4800-030326-404-upper	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/26/03	4800-030326-405-lower		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/3/03	4800-031203-415		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		1/5/05 ^e	6527-050105-423		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		1/5/05 ^e	6527-050105-423	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/14/05	6527-051214-435		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/21/06	MW-4		0.20 J	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/21/06	MW-4 DUP	X	0.25 J	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/27/07	MW-4		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/27/07	MW-4 DUP	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-269		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-285		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-300		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/27/02	4800-020327-270		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-286		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/8/02	4800-021008-301		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-272		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/2/02	4800-020702-287		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009												

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Tetrachloroethene (PCE)	Dibromochloromethane	1,2-Dibromoethane (EDB)	Chlorobenzene	1,1,1,2-Tetrachloroethane	Ethylbenzene	m,p-Xylenes	o-Xylene	Styrene	Bromoform	Isopropylbenzene
<i>Human Health Consumption AWQC^a</i>					3.3	NC	NC	1,600	NC	2,100	NC	NC	NC	140	NC
<i>Risk-Based Concentration^b</i>					1,300	NC	690	NC	NC	6,400,000	710,000	710,000	NC	NC	1,500,000
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					840	NC	NC	50	186	7.3	1.8	NC	NC	NC	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-274		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-304		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-305	X	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		7/3/02	4800-0207-03-292		0.78	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		10/9/02	4800-021009-307		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U
		12/21/06	MW-10		0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	n-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	1,3-Dichlorobenzene
<i>Human Health Consumption AWQC^a</i>					4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Risk-Based Concentration^b</i>					NC	NC	NC	140,000	NC	NC	38,000	NC	51,000	NC	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					2,400	NC	NC	NC	NC	NC	NC	NC	NC	NC	71
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/02	4800-020326-265		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/1/02	4800-020701-281		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-296		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/18/01	4800-011218-256	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/02	4800-020326-266		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/1/02	4800-020701-282		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/1/02	4800-020701-282-DUP	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-297		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-267		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-283		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-4	10/8/02	4800-021008-298		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/18/01	4800-011218-254		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-268		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-284		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-299		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/03	4800-030326-403-upper		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/36/03	4800-030326-404-upper	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/26/03	4800-030326-405-lower		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/3/03	4800-031203-415		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		1/5/05 ^e	6527-050105-423		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		1/5/05 ^e	6527-050105-423	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/14/05	6527-051214-435		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/14/05	6527-051214-435	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/21/06	MW-4		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/21/06	MW-4 DUP		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/27/07	MW-4		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/27/07	MW-4 DUP	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-269		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-285		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-300		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/27/02	4800-020327-270		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-286		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/8/02	4800-021008-301		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
MW-7	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-272		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-273	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/2/02	4800-020702-287		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-303		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U

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Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	Bromobenzene	n-Propylbenzene	2-Chlorotoluene	4-Chlorotoluene	1,3,5-Trimethylbenzene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	1,3-Dichlorobenzene
<i>Human Health Consumption AWQC^a</i>					4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>Risk-Based Concentration^b</i>					NC	NC	NC	140,000	NC	NC	38,000	NC	51,000	NC	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					2,400	NC	NC	NC	NC	NC	NC	NC	NC	NC	71
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-274		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-304		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-305	X	0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-9	12/19/01	4800-011219-262		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-275		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/3/02	4800-0207-03-291		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-306		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		10/9/02	4800-021009-307		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U
		12/21/06	MW-10		0.5 U	0.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.5 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	Naphthalene	Hexachlorobutadiene	
<i>Human Health Consumption AWQC^a</i>					NC	190	NC	1,300	NC	70	NC	NC	NC
<i>Risk-Based Concentration^b</i>					NC	NC	NC	NC	NC	NC	NC	350,000	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					NC	15	NC	14	NC	110	NC	620	9.3
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/26/02	4800-020326-265		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/1/02	4800-020701-281		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/8/02	4800-021008-296		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
	MW-2	12/18/01	4800-011218-256		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/18/01	4800-011218-256	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/26/02	4800-020326-266		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/1/02	4800-020701-282		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/1/02	4800-020701-282-DUP	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/8/02	4800-021008-297		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
	MW-3	12/18/01	4800-011218-255		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/27/02	4800-020327-267		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/2/02	4800-020702-283		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/8/02	4800-021008-298		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
	MW-4	12/18/01	4800-011218-254		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/27/02	4800-020327-268		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/2/02	4800-020702-284		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/8/02	4800-021008-299		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/26/03	4800-030326-403-upper		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/36/03	4800-030326-404-upper	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/26/03	4800-030326-405-lower		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/3/03	4800-031203-415		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/3/03	4800-031203-415	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		1/5/05 ^e	6527-050105-423		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		1/5/05 ^e	6527-050105-423	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/14/05	6527-051214-435		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/14/05	6527-051214-435	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/21/06	MW-4		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/21/06	MW-4 DUP	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/27/07	MW-4		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		12/27/07	MW-4 DUP	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/27/02	4800-020327-269		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/2/02	4800-020702-285		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/8/02	4800-021008-300		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
	MW-6	12/18/01	4800-011218-258		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/27/02	4800-020327-270		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/2/02	4800-020702-286		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/8/02	4800-021008-301		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
MW-7	MW-7	12/18/01	4800-011218-259		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/28/02	4800-020328-272		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		3/28/02	4800-020328-273	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		7/2/02	4800-020702-287		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	
		10/9/02	4800-021009-303		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	

Table 3
2007 Annual Groundwater Sampling Results
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	4-Isopropyltoluene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	1,2,4-Trichlorobenzene	Naphthalene	Hexachlorobutadiene	
<i>Human Health Consumption AWQC^a</i>					NC	190	NC	1,300	NC	70	NC	NC	NC
<i>Risk-Based Concentration^b</i>					NC	NC	NC	NC	NC	NC	NC	350,000	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					NC	15	NC	14	NC	110	NC	620	9.3
Building 4 Area	MW-8	12/19/01	4800-011219-263		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-274		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/3/02	4800-0207-03-290		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-304		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-305	X	2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-9	12/19/01	4800-011219-262		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-275		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/3/02	4800-0207-03-291		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-306		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
	MW-10	12/19/01	4800-011219-261		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		3/28/02	4800-020328-276		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		7/3/02	4800-0207-03-292		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		10/9/02	4800-021009-307		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U
		12/21/06	MW-10		2 U	0.5 U	2 U	0.5 U	2 U	2 U	2 U	2 U	2 U

U = not detected

EB = equipment blank

D = reported result is from a dilution

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 4
2007 Annual Groundwater Sampling Results
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
<i>Human Health Consumption AWQC^a</i>					NC	NC	NC	990	NC	5,300	NC	40,000	140	4,000
<i>Risk-Based Concentration^b</i>					350,000	NC	NC	1.1E+08	NC	2.0E+08	NC	1.6E+09	9.2E+08	1.1E+09
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					620	NC	NC	520	3.7	3.9	6.3	13	6.16	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.02 U	0.02	0.02 U	0.02 U	0.045	0.072	0.082	0.28	0.024	0.024
		3/26/02	4800-020326-265		0.02	0.02 U	0.02 U	0.022	0.026	0.056	0.2	0.38	0.044 B	0.059
		7/1/02	4800-020701-281		0.068	0.034	0.02 U	0.035	0.02 U	0.03	0.43	0.065	0.044	0.19
		10/8/02	4800-021008-296		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.036	0.15	0.14	0.12	0.16
		12/2/03	4800-031202-412	X	0.022	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.032	0.019 U	0.019 U	0.019 U
		12/2/03	4800-031202-412		0.025	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.032	0.019 U	0.019 U	0.019 U
		1/5/05 ^e	6527-050105-421		0.33	0.08	0.2 U	0.025	0.02 U	0.023	0.1	0.023	0.02 U	0.02 U
		1/5/05 ^e	6527-050105-421	X	0.23	0.052	0.02 U	0.02 U	0.02 U	0.02 U	0.077	0.02 U	0.02 U	0.02 U
		12/13/05	6527-051213-431		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.027	0.02 U	0.02 U	0.02 U
		12/13/05	6527-051213-431	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.03	0.02 U	0.02 U	0.02 U
		12/22/06	MW-1		0.0078 J	0.02 U	0.0079 J	0.027	0.02 U	0.012 J	0.18	0.024	0.017 J	0.13
		12/22/06	MW-1 DUP	X	0.018 J	0.0071 J	0.012 J	0.026	0.02 U	0.013 J	0.22	0.029	0.026	0.17
		12/27/07	MW-1		0.019 U	0.019 U	0.019 U	0.019	0.019 U	0.019 U	0.029	0.022	0.019 U	0.087
		12/27/07	MW1 DUP	X	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.035	0.026	0.019 U	0.079
	MW-2	12/18/01	4800-011218-256		0.02 U	0.02 U	0.02 U	0.02 U	0.022	0.02 U	0.02 U	0.02 U	0.02 U	0.035
		12/18/01	4800-011218-256	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.025
		3/26/02	4800-020326-266		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/1/02	4800-020701-282		0.055	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/1/02	4800-020701-282-DUP	X	0.039	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-297		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/18/01	4800-011218-255		0.02 U	0.02 U	0.02 U	0.02 U	0.021	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-267		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.023	0.02 U	0.02 U
		7/2/02	4800-020702-283		0.057	0.028	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-298		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/03	4800-030326-402		0.15	0.036	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.031	0.02 U	0.02 U
	MW-4	12/18/01	4800-011218-254		0.02 U	0.02 U	0.02 U	0.02 U	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-268		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-284		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-299		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/03	4800-030326-403-upper		0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/03	4800-030326-404-upper	X	0.024	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
		3/26/03	4800-030326-405-lower		0.024	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.02 U	0.02 U	0.02 U	0.02 U	0.025	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-269		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-285		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-300		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	MW-6	12/18/01	4800-011218-258		0.02 U	0.02 U	0.02 U	0.02 U	0.026	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-270		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-286		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-301		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	MW-7	12/18/01	4800-011218-259		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/28/02	4800-020328-272	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/28/02	4800-020328-											

Table 4
2007 Annual Groundwater Sampling Results
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
<i>Human Health Consumption AWQC^a</i>					NC	NC	NC	990	NC	5,300	NC	40,000	140	4,000
<i>Risk-Based Concentration^b</i>					350,000	NC	NC	1.1E+08	NC	2.0E+08	NC	1.6E+09	9.2E+08	1.1E+09
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					620	NC	NC	520	3.7	3.9	6.3	13	6.16	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.02 U	0.02 U	0.02 U	0.02 U	0.023	0.02 U	0.02 U	0.02 U	0.075	0.1
		3/28/02	4800-020328-274	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/3/02	4800-0207-03-290		0.031	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/9/02	4800-021009-304		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/9/02	4800-021009-305		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/03	4800-030327-407-upper		0.043	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.097	0.2
		3/27/03	4800-030327-408-lower		0.048	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/3/03	4800-031203-413		0.026	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
		1/6/05 ^e	6527-050106-427		0.039	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/15/05	6527-051215-438		0.046	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Building 43, 50 and 80 Area	MW-9	12/19/01	4800-011219-262		0.02 U	0.02 U	0.02 U	0.02 U	0.02	0.02 U	0.033	0.02 U	0.02 U	0.034
		3/28/02	4800-020328-275		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.023	0.02 U	0.02 U	0.02 U
		7/3/02	4800-0207-03-291		0.036	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.032	0.02 U	0.02 U	0.024
		10/9/02	4800-021009-306		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.02 U	0.02 U	0.02 U	0.46	0.032	0.02 U	0.061	0.02 U	0.02 U	0.045
		3/28/02	4800-020328-276		0.02 U	0.02 U	0.02 U	1.2	0.02 U	0.02 U	0.12	0.02 U	0.02 U	0.032
		7/3/02	4800-0207-03-292		0.043	0.02 U	0.02 U	0.35	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.021
		10/9/02	4800-021009-307		0.02 U	0.02 U	0.02 U	0.85	0.02 U	0.02 U	0.032	0.02 U	0.02 U	0.048

U = not detected

B = analyte found in associated method blank

EB = equipment blank

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 4
2007 Annual Groundwater Sampling Results
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
<i>Human Health Consumption AWQC^a</i>					0.018	0.018	0.018	0.018	0.018	0.018	0.018	NC
<i>Risk-Based Concentration^b</i>					230,000	1.9E+06	18,000	1.5E+07	68,000	1.1E+06	450,000	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					0.027	NC	NC	NC	0.014	NC	NC	NC
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/02	4800-020326-265		0.02 U	0.035 B	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/1/02	4800-020701-281		0.02 U	0.02 U	0.02 U	0.024	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-296		0.12	0.1	0.1	0.089	0.096	0.092	0.086	0.093
		12/2/03	4800-031202-412	X	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
		12/2/03	4800-031202-412		0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
		1/5/05 ^e	6527-050105-421		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		1/5/05 ^e	6527-050105-421	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/13/05	6527-051213-431		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/13/05	6527-051213-431	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/22/06	MW-1		0.0088 J	0.0083 J	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/22/06	MW-1 DUP	X	0.016 J	0.020	0.0098 J	0.0079 J	0.0080 J	0.0056 J	0.02 U	0.0075 J
		12/27/07	MW-1		0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
		12/27/07	MW1 DUP	X	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
MW-2	MW-2	12/18/01	4800-011218-256		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/18/01	4800-011218-256	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/02	4800-020326-266		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/1/02	4800-020701-282		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/1/02	4800-020701-282-DUP	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-297		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
MW-3	MW-3	12/18/01	4800-011218-255		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-267		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-283		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-298		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/03	4800-030326-402		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
MW-4	MW-4	12/18/01	4800-011218-254		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-268		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-284		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-299		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/03	4800-030326-403-upper		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/26/03	4800-030326-404-upper	X	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U
		3/26/03	4800-030326-405-lower		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-269		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-285		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-300		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
MW-6	MW-6	12/18/01	4800-011218-258		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/02	4800-020327-270		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-286		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/8/02	4800-021008-301		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
MW-7	MW-7	12/18/01	4800-011218-259		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/28/02	4800-020328-272		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/28/02	4800-020328-273	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/2/02	4800-020702-287		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/9/02	4800-021009-303		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/03	4800-030327-406		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U

Table 4
2007 Annual Groundwater Sampling Results
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility Remedial Investigation

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
<i>Human Health Consumption AWQC^a</i>					0.018	0.018	0.018	0.018	0.018	0.018	0.018	NC
<i>Risk-Based Concentration^b</i>					230,000	1.9E+06	18,000	1.5E+07	68,000	1.1E+06	450,000	NC
<i>Freshwater AWQC^c</i>					NC	NC	NC	NC	NC	NC	NC	NC
<i>SLV^d</i>					0.027	NC	NC	NC	0.014	NC	NC	NC
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.031	0.047	0.034	0.033	0.049	0.04	0.02 U	0.052
		3/28/02	4800-020328-274	X	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/3/02	4800-0207-03-290		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/9/02	4800-021009-304		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/9/02	4800-021009-305		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/27/03	4800-030327-407-upper		0.043	0.085	0.088	0.074	0.093	0.11	0.02 U	0.13
		3/27/03	4800-030327-408-lower		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/3/03	4800-031203-413		0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
		1/6/05 ^e	6527-050106-427		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/15/05	6527-051215-438		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		12/22/06	MW-8		0.0082 J	0.0082 J	0.0093 J	0.02 U	0.0092 J	0.0078 J	0.02 U	0.013 J
		12/27/07	MW-8		0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
Building 43, 50 and 80 Area	MW-9	12/19/01	4800-011219-262		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/28/02	4800-020328-275		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/3/02	4800-0207-03-291		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02
		10/9/02	4800-021009-306		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		3/28/02	4800-020328-276		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		7/3/02	4800-0207-03-292		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
		10/9/02	4800-021009-307		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U

U = not detected

B = analyte found in associated method blank

EB = equipment blank

^aEPA National Recommended Water Quality Criteria, Protection of Human Health from Organism Consumption Only, 2006.

^bDEQ RBC for vapor intrusion into buildings from DEQ's Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites, September 22, 2003.

^cEPA National Recommended Water Quality Criteria, Protection of Freshwater Aquatic Organisms, Criterion Continuous Concentration (CCC), 2006.

^dDEQ Level II Screening Level Values (SLVs), December 2001.

^e2004 annual sampling was deferred until January of 2005 due to a sampling equipment malfunction.

NA = not analyzed

NC= no criteria or screening level

Shading indicates sampling result exceeds RBC or protection of human health AWQC.

Box indicates result exceeds protection of freshwater aquatic organisms AWQC or SLV.

Table 1
Soil Analytical Results: TPH
Swan Island Upland Facility
Portland, Oregon

Operable Unit 1 - August 2007 Addendum								
Sample Number	Sub E-N-1	Sub E-E-1	Sub E-S-1	Sub E-W-1	Sub F-N-1	Sub F-E-1	Sub F-S-1	Sub F-W-1
Sampling Interval (inches)	7 - 23	7 - 19	8 - 23	9 - 21	4 - 21	13 - 28	8 - 22	4 - 19
Sample Date	8/2/2007	8/2/2007	8/2/2007	8/2/2007	8/2/2007	8/2/2007	8/2/2007	8/2/2007
TPH-HCID	Concentrations in mg/kg (ppm)							
Gasoline-Range	<27	<27	<24	<26	<23	<24	<24	<26
Diesel-Range	<67	<67	<60	<64	<58	<58	<58	<63
Residual-Range	<140	<140	<120	<130	<120	<120	<120	<130

Operable Unit 1																
Sample Number	Sub B-N-1	Sub B-E-1	Sub B-S-1	Sub B-W-1	Sub D-N-1	Sub D-E-1	Sub D-S-1	Sub D-W-1	Sub K-N-1	Sub K-E-1	Sub K-S-1	Sub K-W-1	Sub L-N-1	Sub L-E-1	Sub L-S-1	Sub L-W-1
Sampling Interval (inches)	20 - 34	20 - 34	14 - 26	9 - 22	12 - 24	10 - 22	12 - 24	11 - 24	9 - 22	12 - 25	15 - 25	9 - 21	17 - 29	20 - 32	13 - 25	12 - 26
Sample Date	5/31/2007	39,233	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	5/31/2007	
TPH-HCID	Concentrations in mg/kg (ppm)															
Gasoline-Range	<27	<25	<22	<22	<23	<22	<23	<23	<22	<23	<22	<22	<22	<26	<23	<23
Diesel-Range	<67	<62	<54	<55	<58	<54	<58	<57	<55	<56	<55	<54	<55	<65	<57	<57
Residual-Range	<140	<130	<110	<110	<120	<110	<120	<120	<110	<120	<110	<110	<110	<130	<120	<120

Notes:

1. TPH-HCID = Hydrocarbons identification by Northwest Method NWTPH-HCID.
2. mg/kg = milligram per kilogram (parts per million [ppm]).
3. < = Not detected above the method reporting limit.
4. * = Chemical results from diesel and residual-range petroleum hydrocarbons follow-up analysis by Northwest Method NWTPH-Dx (with silica gel cleanup).
5. Sample ID nomenclature is per the following: substation designation-geographic orientation-sample number.
- For example, Sub M-N-1 = Substation M, North corner, sample 1.

Table 2
Soil Analytical Results: PCBs
Swan Island Upland Facility
Portland, Oregon

Operable Unit 1 - August 2007 Addendum											
Sample ID: Sampling Interval (inches) Sample Date:	Screening Levels			Sub E-N-1 7 - 23 8/2/2007	Sub E-E-1 7 - 19 8/2/2007	Sub E-S-1 8 - 23 8/2/2007	Sub E-W-1 9 - 21 8/2/2007	Sub F-N-1 4 - 21 8/2/2007	Sub F-E-1 13 - 28 8/2/2007	Sub F-S-1 8 - 22 8/2/2007	Sub F-W-1 4 - 19 8/2/2007
	RBC	SSL	SLV								
PCBs											
Aroclor 1016	980	24,000	100,000	<10	<10	<10	<10	<10	<10	<10	<9.9
Aroclor 1221	980	830	--	<20	<20	<20	<20	<20	<20	<20	<20
Aroclor 1232	980	830	--	<10	<10	<10	<10	<10	<10	<10	<9.9
Aroclor 1242	980	830	1,500	<10	<10	<10	<10	<10	<10	<10	<9.9
Aroclor 1248	980	830	--	<10	<10	<10	<10	<10	<10	<10	<9.9
Aroclor 1254	980	830	700	<10	<10	<10	<10	<27 i	<10	<10	<9.9
Aroclor 1260	980	830	--	<10	15	<10	<10	<41 i	<10	<10	110

Operable Unit 1																			
Sample ID: Sampling Interval (inches) Sample Date:	Screening Levels			Sub B-N-1 20 - 34 5/31/2007	Sub B-E-1 20 - 34 5/31/2007	Sub B-S-1 14 - 26 5/31/2007	Sub B-W-1 9 - 22 5/31/2007	Sub D-N-1 12 - 24 5/31/2007	Sub D-E-1 10 - 22 5/31/2007	Sub D-S-1 12 - 24 5/31/2007	Sub D-W-1 11 - 24 5/31/2007	Sub K-N-1 9 - 22 5/3/2007	Sub K-E-1 12 - 25 5/3/2007	Sub K-S-1 15 - 25 5/3/2007	Sub K-W-1 9 - 21 5/3/2007	Sub L-N-1 17 - 29 5/3/2007	Sub L-E-1 20 - 32 5/31/2007	Sub L-S-1 13 - 25 5/31/2007	Sub L-W-1 12 - 26 5/31/2007
	RBC	SSL	SLV																
PCBs																			
Aroclor 1016	980	24,000	100,000	<9.9	<10	<9.9	<9.9	<10	<10	<10	<10	<9.9	<10	<9.9	<10	<10	<9.9		
Aroclor 1221	980	830	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20		
Aroclor 1232	980	830	--	<9.9	<10	<9.9	<9.9	<10	<10	<10	<10	<9.9	<10	<9.9	<10	<10	<9.9		
Aroclor 1242	980	830	1,500	<9.9	<10	<9.9	<9.9	<10	<10	<10	<10	<9.9	<10	<9.9	<10	<10	<9.9		
Aroclor 1248	980	830	--	<9.9	<10	<9.9	<9.9	<10	<10	<10	<10	<9.9	<10	<9.9	<10	<10	<9.9		
Aroclor 1254	980	830	700	<9.9	<10	<9.9	77	<10	<10	<10	<10	19	97	48	<9.9	<10	<10	<9.9	
Aroclor 1260	980	830	--	<9.9	<10	<9.9	77	<10	<10	<10	<10	19	97	48	<9.9	<10	<10	<9.9	

Notes:

1. PCBs = Polychlorinated Biphenyls by EPA Method 8082.
2. µg/kg = micrograms per kilogram (parts per billion [ppb]).
3. < = Not detected above the method reporting limit.
4. Shading = Detected concentration.
5. Sample ID nomenclature is per the following: substation designation-geographic orientation-sample number.
 - For example, Sub M-N-1 = Substation M, North corner, sample 1.
6. RBC = Oregon Department of Environmental Quality Risk-Based Concentrations (RBC Table Revised July 4, 2007) for the direct contact exposure scenario (occupational receptors).
 - Screening values for individual aroclors unavailable. RBC for total PCBs presented.
7. SSL = EPA Region 6 Human Health Medium-Specific Screening Levels (December 2006) for soil (industrial outdoor worker).
8. SLV = Oregon Department of Environmental Quality Level II Screening Level Values (SLVs) for Terrestrial Receptors (lowest available value).

Table 3
Soil Analytical Results: PAHs
Swan Island Upland Facility
Portland, Oregon

Operable Unit 1 - August 2007 Addendum						
Sample ID: Sampling Interval (inches) Sample Date:	Screening Levels			Sub K-C-1 7 - 19 8/2/2007	Sub L-C-1 12 - 27 8/2/2007	Berth 305-1 11 - 21 8/2/2007
	RBC	SSL	SLV			
	Concentrations in µg/kg (ppb)					
PAHs						
Naphthalene	770,000	210,000	10,000	1.2 J	4.6 J	13
2-Methylnaphthalene	--	--	--	0.96 J	2.8 J	2.9 J
Acenaphthene	41,000,000	33,000,000	20,000	<5	0.85 J	0.60 J
Acenaphthylene	--	--	--	<5	6.0	2.1 J
Anthracene	--	100,000,000	--	0.73 J	11	2.0 J
Benz(a)anthracene	2,700	2,300	--	6.4	98	5.0
Benzo(a)pyrene	270	230	125,000	5.9	76	5.2
Benzo(b)fluoranthene	2,700	2,300	--	11	64	7.7
Benzo(g,h,i)perylene	--	--	--	10	38	12
Benzo(k)fluoranthene	27,000	23,000	--	2.9 J	26	2.5 J
Chrysene	270,000	234,000	--	9.3	100	8.5
Dibenz(a,h)anthracene	270	230	--	2.4 J	11	2.9 J
Dibenzofuran	--	--	2	<5	1.0 J	1.2 J
Fluoranthene	29,000,000	24,000,000	--	8.9	120	21
Fluorene	35,000,000	26,000,000	30,000	<5	2.4 J	1.0 J
Indeno(1,2,3-cd)pyrene	2,700	2,300	--	8.9	42	8.5
Phenanthrene	--	--	--	2.8 J	16	11
Pyrene	21,000,000	32,000,000	--	11	130	22

Notes:

1. PAHs = Polynuclear Aromatic Hydrocarbons by EPA Method 8270C-SIM
2. µg/kg = micrograms per kilogram (parts per billion [ppb]).
3. < = Not detected above the method reporting limit.
4. -- = No screening level available.
5. Sample ID nomenclature is per the following: substation designation-geographic orientation-sample number.
 - For example, Sub K-C-1 = Substation K, Center, Sample 1.
6. RBC = Oregon Department of Environmental Quality Risk-Based Concentrations (RBC Table Revised July 4, 2007) for the direct contact exposure scenario (occupational receptors).
7. SSL = EPA Region 6 Human Health Medium-Specific Screening Levels (December 2006) for soil (industrial outdoor worker).
8. SLV = Oregon Department of Environmental Quality Level II Screening Level Values (SLVs) for Terrestrial Receptors (lowest available value).

Table 4
Soil Analytical Results: Metals
Swan Island Upland Facility
Portland, Oregon

Operable Unit 1 - August 2007 Addendum							
Sample ID: Sampling Interval (inches) Sample Date:	Screening Levels			Sub K-C-1 7 - 19 8/2/2007	Sub L-C-1 12 - 27 8/2/2007	Berth 305-1 11 - 21 8/2/2007	
	Background	RBC	SSL	SLV			
	Concentrations in mg/kg (ppm)						
Metals							
Antimony	5	--	454	5	0.26	0.08	0.1
Arsenic	5.8	1.7	284	10	1.7	2	1.7
Cadmium	0.9	8,600	563	4	0.22	0.07	0.1
Chromium	26	--	498	0.4	10	15.2	13.9
Copper	34	38,000	42,178	50	18.8	17.3	14.8
Lead	17	800	800	16	14	4.77	4.46
Mercury	0.04	310	341	0.1	0.04	0.05	0.04
Nickel	21	20,000	22,711	30	15.6	19.3	17.3
Silver	0.6	5,100	5,678	2	0.03	0.04	0.03
Zinc	95	--	100,000	50	528	44.8	43.1

Notes:

1. Metals by EPA 6000/7000 Series Methods.
2. mg/kg = milligrams per kilogram (parts per million [ppm]).
3. < = Not detected above the method reporting limit.
4. -- = No screening level available.
5. Sample ID nomenclature is per the following: substation designation-geographic orientation-sample number.
 - For example, Sub K-C-1 = Substation K, Center, Sample 1.
6. RBC = Oregon Department of Environmental Quality Risk-Based Concentrations (RBC Table Revised July 4, 2007) for the direct contact exposure scenario (occupational receptors).
7. SSL = EPA Region 6 Human Health Medium-Specific Screening Levels (December 2006) for soil (industrial outdoor worker).
8. SLV = Oregon Department of Environmental Quality Level II Screening Level Values (SLVs) for Terrestrial Receptors (lowest available value).
9. Background Levels are from the Washington Department of Ecology's publication Natural Background Soil Metals Concentrations in Washington State, dated October 1994. Values are the 90th percentile values for Clark County, except for antimony, selenium, silver and thallium where state-wide data were used due to a limited number of detections.
10. Bold values indicate that the detected concentration exceeds background and the SLV.

Appendix B

Mean and 90% UCL Statistical Calculations

Table B-1
ProUCL Input Data - Groundwater
Volatile Organic Compound (VOC) Concentrations in Groundwater (ug/L)
Swan Island Upland Facility

Area of Investigation	Monitoring Well	Date	Sample No.	Duplicate	Vinyl Chloride	1,2-Dichloroethane (EDC)	Trichloroethene (TCE)	Tetrachloroethene (PCE)	Naphthalene
BWTP and Building 72 Area	MW-1	12/18/01	4800-011218-253		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/26/02	4800-020326-265		0.5 U	0.5 U	0.5 U	0.5 U	0.02
		7/1/02	4800-020701-281		0.5 U	0.5 U	0.5 U	0.5 U	0.068
		10/8/02	4800-021008-296		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		12/2/03	4800-031202-412	X					0.025
		1/5/05 ^e	6527-050105-421						0.33
		12/13/05	6527-051213-431						0.02 U
		12/22/06	MW-1						0.0078 J
		12/27/07	MW-1						0.019 U
	MW-2	12/18/01	4800-011218-256		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/26/02	4800-020326-266		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/1/02	4800-020701-282		0.5 U	0.5 U	0.5 U	0.5 U	0.055
		10/8/02	4800-021008-297		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
	MW-3	12/18/01	4800-011218-255		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/27/02	4800-020327-267		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/2/02	4800-020702-283		0.5 U	0.5 U	0.5 U	0.5 U	0.057
		10/8/02	4800-021008-298		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/26/03	4800-030326-402						0.15
	MW-4	12/18/01	4800-011218-254		0.5 U	0.5 U	270	0.5 U	0.02 U
		3/27/02	4800-020327-268		0.5 U	0.5 U	160	0.5 U	0.02 U
		7/2/02	4800-020702-284		0.5 U	0.5 U	91	0.5 U	0.02 U
		10/8/02	4800-021008-299		0.24	0.5 U	120	0.5 U	0.02 U
		3/26/03	4800-030326-403-upper	X	0.5 U	0.5 U	53	0.5 U	0.024
		3/26/03	4800-030326-405-lower		0.5 U	0.5 U	82	0.5 U	0.024
		12/3/03	4800-031203-415	X	0.5 U	0.5 U	56	0.5 U	
		1/5/05 ^e	6527-050105-423		0.5 U	0.5 U	31	0.5 U	
		12/14/05	6527-051214-435		0.5 U	0.5 U	15	0.5 U	
		12/21/06	MW-4 DUP	X	0.5 U	0.5 U	5.1	0.25	
		12/27/07	MW-4 DUP	X	0.5 U	0.5 U	4.0	0.5 U	
Paint Shed/Blast Booth, Building 73 Area	MW-5	12/18/01	4800-011218-257		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/27/02	4800-020327-269		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/2/02	4800-020702-285		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		10/8/02	4800-021008-300		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
	MW-6	12/18/01	4800-011218-258		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/27/02	4800-020327-270		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/2/02	4800-020702-286		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		10/8/02	4800-021008-301		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
	MW-7	12/18/01	4800-011218-259		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/28/02	4800-020328-272		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/2/02	4800-020702-287		0.5 U	0.5 U	0.5 U	0.5 U	0.025
		10/9/02	4800-021009-303		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/27/03	4800-030327-406						0.072
Building 4 Area	MW-8	12/19/01	4800-011219-263		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/28/02	4800-020328-274		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/3/02	4800-0207-03-290		0.5 U	0.5 U	0.5 U	0.5 U	0.031
		10/9/02	4800-021009-304		0.5 U	0.5 U	0.12	0.5 U	0.02 U
		3/27/03	4800-030327-407-upper						0.043
		3/27/03	4800-030327-408-lower						0.048
		12/3/03	4800-031203-413						0.026
		1/6/05 ^e	6527-050106-427						0.039
		12/15/05	6527-051215-438						0.046
		12/22/06	MW-8						0.02 U
		12/27/07	MW-8						0.019 U
	MW-9	12/19/01	4800-011219-262		0.5 U	6.3	0.5 U	0.5 U	0.02 U
		3/28/02	4800-020328-275		0.5 U	5.7	0.5 U	0.5 U	0.02 U
		7/3/02	4800-0207-03-291		0.5 U	4.5	0.5 U	0.5 U	0.036
		10/9/02	4800-021009-306		0.5 U	4.1	0.5 U	0.5 U	0.02 U
Building 43, 50 and 80 Area	MW-10	12/19/01	4800-011219-261		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		3/28/02	4800-020328-276		0.5 U	0.5 U	0.5 U	0.5 U	0.02 U
		7/3/02	4800-0207-03-292		0.5 U	0.5 U	0.5 U	0.78	0.043
		10/9/02	4800-021009-307		0.5 U	0.5 U	0.14	0.5 U	0.02 U
		12/21/06	MW-10		0.5 U	0.5 U	0.41	0.5 U	

U = not detected

Table B-2
ProUCL Input Data - Soil
Metal Concentrations in Soil, 0 to 3 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Chromium	Lead	Nickel	Zinc
Former Hazardous Waste Storage Area									
	4800-010129-039	B-48	2	10.7 U	3.5	23.8	6.5	21	53
	4800-010129-041	B-49	2	11.3 U	2.8 U	19.3	3.3	25.7	57.1
	4800-010130-043	B-50	2	11.6 U	2.9	24.8	8.4	20.8	58.4
	4800-010130-045	B-51	2	11.7 U	3.9	29.7	8.8	26.2	66.9
	4800-010131-051	B-29	2	10.9 U	2.1	16.6	3.4	18.8	51.3
Building 73	4800-010131-047	B-30	2	11.8 U	2.2	15.9	3.8	19.8	45.8
	4800-010131-049	B-31	2	12.5 U	5.7	34.8	196	31.4	645
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	11.3 U	2.4	17.3	3.4	22.4	51.3
	4800-010201-053	B-43	2	11.2 U	2.8	18.6	2.7	20.5	53.7
	4800-010202-057	B-44	2	11 U	3.2	16.5	2.6	19.5	50.1
	4800-010201-055	B-45	2	11.3 U	2.9	19.5	6.1	21.7	66.8
	4800-010202-063	B-46	2	11.6 U	2	19.6	3.5	22.1	52.4
	PS-S-14-01	Boring 14	1		2.85	13.7	14.6		
Building 4	4800-010207-090	B-32	2	11.9 U	2.4	20.7	3.3	22.2	50
	4800-010206-087	B-33	2	10.9 U	2.7	26.7	6.7	24.2	62.6
Building 58	4800-010208-098	B-47	2	11.1 U	2.7	31.4	9.5	20.4	72.9
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	11.3 U	3.9	20.9	3.8	23.5	53.3
	4800-010215-133	B-38	2	10.7 U	1.7	15.1	2.7	20.4	49.3
	4800-010215-135	B-39	2	11.9 U	2.3	29.6	5	29	71.4
	4800-010215-139	B-40	2	10.8 U	1.6	13.7	2	17	48
	4800-010219-153	B-41	2	11.8 U	2.7	19.2	2.4	23.5	65.2
	PS-S-10-01	Boring 10	1		3.46	20.9	7.14		
	PS-S-11-01	Boring 11	1		3.65	25.1	8.99		
	PS-S-12-01	Boring 12	1		2.92	15.9	5.66		
	PS-S-13-01	Boring 13	1		3.67	14.8	6.47		
Electrical Substations	PS-S-15-01	Boring 15	1.5		1.57	8.1	18.1		
Berth 313	PS-S-08-01	Boring 8	1		2.13	11.9	5 U		
Berths 304 and 305	PS-S-16-01	Boring 16	1		2.67	13.5	5 U		
BWTP	4800-010209-101	B-1	2	11 U	2.8	16.2	10.7	20	61.5
	4800-010209-107	B-2	2	11.1 U	3.1	23.1	7.2	23.9	80.9
	4800-010212-110	B-3	2	10.8 U	2.7	15.3	25.6	17.7	71.2
	4800-010212-116	B-4	2	12 U	3.3	26	5.8	24.3	54.7
	4800-010212-118	B-5	2	11.7 U	2.9 U	30.9	265	21.3	433
	4800-010213-120	B-6	2	11.3 U	3.2	28.7	29	21.1	94.2
	4800-010213-123	B-7	2	11.2 U	3.3	29.8	27	26.7	91.5
	4800-010216-148	B-7a	2	11.4 U	3.8	35.4	32.9	27.7	106
	4800-010213-124	B-8	2	11.3 U	3.8	21.8	24	23.3	85.8
	PS-S-09-01	Boring 9	1		1.97	9.88	9.14		
Building 72	4800-010214-127	B-9	2	11.3 U	3.8	21.8	24	23.3	85.8
	4800-010214-129	B-10	2	11.4 U	1.1 U	17.4	3.6	21	53.6
	4800-010216-146	B-11	2	11.4 U	1.1 U	17.4	3.6	21	53.6
	4800-010216-144	B-12	2	10.5 U	2.9	16.7	2.6	21.1	53.3
Substations	Sub K-C-1	1.1	0.26	1.7	10	14	15.6	528	
	Sub L-C-1	1.6	0.08	2	15.2	4.77	19.3	44.8	
	Berth 305-1	1.3	0.1	1.7	13.9	4.46	17.3	43.1	

Table B-3
ProUCL Input Data - Soil
Polychlorinated Biphenyl (PCB) Concentrations in Soil, 0 - 3 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1260	Total PCBs ^c
Former Hazardous Waste Storage Area	4800-010129-039	B-48	2	0.1 U	0.1 U
	4800-010129-041	B-49	2	0.1 U	0.1 U
	4800-010130-043	B-50	2	0.1 U	0.1 U
	4800-010130-045	B-51	2	0.1 U	0.1 U
Building 73	4800-010202-070	B-42	2	10 U	10 U
	4800-010201-053	B-43	2	10 U	10 U
Building 43, 50 and 80 Area	4800-010202-057	B-44	2	10 U	10 U
	4800-010201-055	B-45	2	10 U	10 U
	4800-010202-063	B-46	2	10 U	10 U
	PS-S-14-01	Boring 14	1	50 U	50 U
	PS-S-11-01	Boring 11	1	50 U	50 U
	PS-S-12-01	Boring 12	1	50 U	50 U
	PS-S-13-01	Boring 13	1	50 U	50 U
Electrical Substations	4800-010226-155	S-7	0.75	10 U	10 U
	4800-010226-156	S-8	0.75	10 U	10 U
	4800-010226-157	S-9	0.75	10 U	10 U
	4800-010226-158	S-10	0.75	10	45
	4800-010226-159	S-11	0.75	10 U	10 U
	4800-010226-160	S-12	0.75	12	30
	4800-010226-161	S-13	0.75	10 U	10 U
	4800-010226-162	S-14	0.75	10 U	10 U
	4800-010226-163	S-15	0.75	10 U	10 U
	4800-010226-164	S-16	0.75	10 U	10 U
	4800-010226-165	S-17	0.75	89	94
	4800-010226-166	S-18	0.75	10 U	10 U
	4800-010226-167	S-19	0.75	10 U	10 U
	4800-010226-168	S-20	0.75	10 U	10 U
	4800-010226-169	S-21	0.75	10 U	10 U
	4800-010226-170	S-22	0.75	10 U	10 U
	4800-010226-171	S-23	0.75	10 U	10 U
	4800-010226-172	S-24	0.75	10 U	10 U
	4800-010226-173	S-25	0.75	10 U	10 U
	4800-010226-174	S-26	0.75	10 U	10 U
	4800-010226-175	S-27	0.75	10 U	10 U
	4800-010226-176	S-28	0.75	10 U	10 U
	4800-010226-177	S-29	0.75	10 U	10 U
	4800-010226-178	S-30	0.38	56	176
	4800-010226-179	S-31	0.38	29	78
	4800-010226-180	S-32	0.38	34	103
	4800-010226-181	S-33	0.38	24	59
	4800-010226-182	S-34	0.38	41	124
	4800-010226-183	S-35	0.38	25	91
	4800-010226-184	S-36	0.38	45	135
	4800-010226-185	S-37	0.38	18	53
	4800-010226-186	S-38	0.38	22	84
	4800-010226-187	S-39	0.38	34	144
	4800-010226-188	S-40	0.38	42	47
	4800-010226-189	S-41	0.38	11	34
	4800-010226-190	S-42	0.38	210	215
	4800-010226-191	S-43	0.38	120	125
	4800-010226-192	S-44	0.38	10 U	10 U
	4800-010226-193	S-45	0.38	15	39
	4800-010226-194	S-46	0.38	12	28
	4800-010226-195	S-47	0.38	10 U	10 U
	PS-S-15-01	Boring 15	1.5	50 U	50 U
Berths 304 and 305	PS-S-16-01	Boring 16	1	50 U	50 U
BWTP	4800-010209-101	B-1	2	19	24
	4800-010209-107	B-2	2	10 U	10 U
	4800-010212-110	B-3	2	100	105
	4800-010212-116	B-4	2	10 U	10 U
	4800-010212-118	B-5	2	1,600	1650
	4800-010213-120	B-6	2	100	105
	4800-010213-123	B-7	2	520	525
	4800-010216-148	B-7a	2	190	195
	4800-010213-124	B-8	2	770	795
	4800-010216-146	B-11	2	160	380
	PS-S-09-01	Boring 9	1	51.3	76

Table B-3
ProUCL Input Data - Soil
Polychlorinated Biphenyl (PCB) Concentrations in Soil, 0 - 3 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1260	Total PCBs ^c
Building 72	4800-010216-144	B-12	2	10 U	10 U
Substations		Sub B-N-1	2.3	9.9 U	9.9 U
		Sub B-E-1	2.3	10 U	10 U
		Sub B-S-1	1.7	9.9 U	9.9 U
		Sub B-W-1	1.3	77	82
		Sub D-N-1	1.5	10 U	10 U
		Sub D-E-1	1.3	10 U	10 U
		Sub D-S-1	1.5	10 U	10 U
		Sub D-W-1	1.5	10 U	10 U
		Sub K-N-1	1.3	19	24
		Sub K-E-1	1.5	97	102
		Sub K-S-1	1.7	48	53
		Sub K-W-1	1.3	9.9 U	9.9 U
		Sub L-N-1	1.9	10 U	10 U
		Sub L-E-1	2.2	10 U	10 U
		Sub L-S-1	1.6	10 U	10 U
		Sub L-W-1	1.6	9.9 U	9.9 U
		Sub A-N-1	2.9	9.6 U	9.6 U
		Sub A-E-1	3.3	9.6 U	9.6 U
		Sub A-S-1	2.8	9.9 U	9.9 U
		Sub A-W-1	2.3	10 U	10 U
		Sub P-N-1	0.8	9.9 U	9.9 U
		Sub P-E-1	0.9	9.8 U	9.8 U
		Sub P-S-1	2.0	10 U	10 U
		Sub P-W-1	0.9	9.9 U	9.9 U
		Sub Q-N-1	0.8	44	49
		Sub Q-E-1	1.0	47	52
		Sub Q-S-1	1.3	10 U	10 U
		Sub Q-W-1	1.4	48	53
		Sub R-N-1	1.5	9.7 U	9.7 U
		Sub R-E-1	1.8	9.8 U	9.8 U
		Sub R-S-1	1.4	9.8 U	9.8 U
		Sub R-W-1	1.6	9.9 U	9.9 U
		Sub M-N-1	1.6	9.9 U	9.9 U
		Sub M-E-1	1.8	9.9 U	9.9 U
		Sub M-S-1	0.8	9.9 U	9.9 U
		Sub M-W-1	1.7	10 U	10 U
		Sub E-N-1	1.3	10 U	10 U
		Sub E-E-1	1.1	15	20
		Sub E-S-1	1.3	10 U	10 U
		Sub E-W-1	1.3	10 U	10 U
		Sub F-N-1	1.0	41 U	34 U
		Sub F-E-1	1.7	10 U	10 U
		Sub F-S-1	1.3	10 U	10 U
		Sub F-W-1	1.0	110	115

U = not detected

^c Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit for samples with concentrations reported as not detected.

Table B-4
ProUCL Input Data - Soil
Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 3 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Sample Date	Diesel-Range Organics
Former Hazardous Waste Storage Area					
	4800-010129-039	B-48	2	75 U	
	4800-010129-041	B-49	2	68 U	
	4800-010130-043	B-50	2	76 U	
	4800-010130-045	B-51	2	69 U	
Building 73	4800-010131-051	B-29	2	53 U	
	4800-010131-047	B-30	2	59 U	
	4800-010131-049	B-31	2	62 U	
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	55 U	
	4800-010201-053	B-43	2	56 U	
	4800-010202-057	B-44	2	53 U	
	4800-010201-055	B-45	2	55 U	
	4800-010202-063	B-46	2	56 U	
Building 4	4800-010207-090	B-32	2	60 U	
	4800-010206-087	B-33	2	66 U	
Building 58	4800-010208-098	B-47	2	68 U	
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	57 U	
	4800-010215-133	B-38	2	330	
	4800-010215-135	B-39	2	50 U	
	4800-010215-139	B-40	2	27 U	
	4800-010219-153	B-41	2	71 U	
Electrical Substations^b	4800-010226-155	S-7	0.75	57	
	4800-010226-156	S-8	0.75	27	
	4800-010226-157	S-9	0.75	26	
	4800-010226-158	S-10	0.75	54	
	4800-010226-159	S-11	0.75	29	
	4800-010226-160	S-12	0.75	27	
	4800-010226-161	S-13	0.75	26	
	4800-010226-162	S-14	0.75	27	
	4800-010226-163	S-15	0.75	110	
	4800-010226-164	S-16	0.75	220	
	4800-010226-165	S-17	0.75	250	
	4800-010226-166	S-18	0.75	130	
	4800-010226-167	S-19	0.75	26	
	4800-010226-168	S-20	0.75	27	
	4800-010226-169	S-21	0.75	27	
	4800-010226-170	S-22	0.75	55	
	4800-010226-171	S-23	0.75	50 U	
	4800-010226-172	S-24	0.75	50 U	
	4800-010226-173	S-25	0.75	29	
	4800-010226-174	S-26	0.75	27	
	4800-010226-175	S-27	0.75	26	
	4800-010226-176	S-28	0.75	50 U	
	4800-010226-177	S-29	0.75	26	
	4800-010226-178	S-30	0.38	27	
	4800-010226-179	S-31	0.38	50 U	
	4800-010226-180	S-32	0.38	50 U	
	4800-010226-181	S-33	0.38	25 U	
	4800-010226-182	S-34	0.38	60	
	4800-010226-183	S-35	0.38	50 U	
	4800-010226-184	S-36	0.38	26 U	
	4800-010226-185	S-37	0.38	50 U	
	4800-010226-186	S-38	0.38	50 U	
	4800-010226-187	S-39	0.38	25 U	
	4800-010226-188	S-40	0.38	50 U	
	4800-010226-189	S-41	0.38	50 U	
	4800-010226-190	S-42	0.38	50 U	
	4800-010226-191	S-43	0.38	50 U	
	4800-010226-192	S-44	0.38	50 U	
	4800-010226-193	S-45	0.38	50 U	
	4800-010226-194	S-46	0.38	50 U	
	4800-010226-195	S-47	0.38	26 U	

Table B-4
ProUCL Input Data - Soil
Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 3 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Sample Date	Diesel-Range Organics
BWTP	4800-010209-101	B-1	2	50 U	
	4800-010209-107	B-2	2	50 U	
	4800-010212-110	B-3	2	45	
	4800-010212-116	B-4	2	50 U	
	4800-010212-118	B-5	2	170	
	4800-010213-120	B-6	2	28 U	
	4800-010216-148	B-7a	2	50 U	
	4800-010213-124	B-8	2	50 U	
Building 72	4800-010214-127	B-9	2	50 U	
	4800-010214-129	B-10	2	28 U	
	4800-010216-146	B-11	2	50 U	
	4800-010216-144	B-12	2	50 U	
Substations	Sub B-N-1	2.3	5/31/2007	67 U	
	Sub B-E-1	2.3	5/31/2007	62 U	
	Sub B-S-1	1.7	5/31/2007	54 U	
	Sub B-W-1	1.3	5/31/2007	55 U	
	Sub D-N-1	1.5	5/31/2007	58 U	
	Sub D-E-1	1.3	5/31/2007	54 U	
	Sub D-S-1	1.5	5/31/2007	58 U	
	Sub D-W-1	1.5	5/31/2007	57 U	
	Sub K-N-1	1.3	5/31/2007	55 U	
	Sub K-E-1	1.5	5/31/2007	56 U	
	Sub K-S-1	1.7	5/31/2007	55 U	
	Sub K-W-1	1.3	5/31/2007	54 U	
	Sub L-N-1	1.9	5/31/2007	55 U	
	Sub L-E-1	2.2	5/31/2007	65 U	
	Sub L-S-1	1.6	5/31/2007	57 U	
	Sub L-W-1	1.6	5/31/2007	57 U	
	Sub A-N-1	2.9	5/31/2007	54 U	
	Sub A-E-1	3.3	5/31/2007	54 U	
	Sub A-S-1	2.8	5/31/2007	55 U	
	Sub A-W-1	2.3	5/31/2007	59 U	
	Sub P-N-1	0.8	5/31/2007	63 U	
	Sub P-E-1	0.9	5/31/2007	55 U	
	Sub P-S-1	2.0	5/31/2007	71 U	
	Sub P-W-1	0.9	5/31/2007	62 U	
	Sub Q-N-1	0.8	5/3/2007	50 U	
	Sub Q-E-1	1.0	5/3/2007	50 U	
	Sub Q-S-1	1.3	5/3/2007	50 U	
	Sub Q-W-1	1.4	5/3/2007	50 U	
	Sub R-N-1	1.5	5/31/2007	68 U	
	Sub R-E-1	1.8	5/31/2007	59 U	
	Sub R-S-1	1.4	5/31/2007	60 U	
	Sub R-W-1	1.6	5/31/2007	66 U	
	Sub M-N-1	1.6	5/31/2007	54 U	
	Sub M-E-1	1.8	5/31/2007	54 U	
	Sub M-S-1	0.8	5/31/2007	55 U	
	Sub M-W-1	1.7	5/31/2007	55 U	
	Sub E-N-1	1.3	8/2/2007	67 U	
	Sub E-E-1	1.1	8/2/2007	67 U	
	Sub E-S-1	1.3	8/2/2007	60 U	
	Sub E-W-1	1.3	8/2/2007	64 U	
	Sub F-N-1	1.0	8/2/2007	58 U	
	Sub F-E-1	1.7	8/2/2007	58 U	
	Sub F-S-1	1.3	8/2/2007	58 U	
	Sub F-W-1	1.0	8/2/2007	63 U	

Table B-5
ProUCL Input Data - Soil
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil, 0 - 3 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	Benz(a)anthracene	Benz(b)fluoranthene	Benz(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
Former Hazardous Waste Storage Area	4800-010129-039	B-48	2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	8.2	8.7	6.8 U	9.4
Building 73	4800-010131-049	B-31	2	6.2 U	55	63	61	61	44	8.5	36
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	7.6	5.6 U	9.5
	4800-010202-057	B-44	2	5.5 U	8.1	5.5 U	7.2	8.1	7.9	5.5 U	7.6
	4800-010202-063	B-46	2	5.8 U	5.8 U	8.5	7.8	7.9	9.1	5.8 U	9.2
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
Buiding 58	4800-010208-098	B-47	2	6.8 U	14	16	14	15	16	6.8 U	16
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	15	14	5.3 U	5.3 U	9.4	5.3 U	6.3	19
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
Electrical Substations	4800-010226-155	S-7	0.75	5.8	5.8	7.9	5.8	5.8	5.8	5.8	13
	4800-010226-161	S-13	0.75	5.3	6.1	5.3	5.3	5.3	5.3	5.3	9.7
	4800-010226-163	S-15	0.75	5.4	5.4	5.4	5.4	5.4	5.4	5.4	7.8
	4800-010226-164	S-16	0.75	5.3	5.7	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-165	S-17	0.75	54	54	75	62	58	55	54	72
	4800-010226-170	S-22	0.75	5.9	17	29	31	31	35	9.2	36
	4800-010226-175	S-27	0.75	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	4800-010226-177	S-29	0.75	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-181	S-33	0.38	10	220	320	280	270	250	54	230
	4800-010226-195	S-47	0.38	5.3 U	12	24	20	22	28	5.3 U	29
BWTP	4800-010209-101	B-1	2	5.5 U	17	21	17	22	25	5.5 U	24
	4800-010212-110	B-3	2	5.4 U	8.4	12	12	15	17	5.4 U	19
	4800-010212-118	B-5	2	10	17	24	19	18	19	5.9 U	24
	4800-010216-148	B-7a	2	6.2 U	30	33	32	34	34	7.4	31
Building 73	4800-010214-127	B-9	2	5.6 U	7.4	7.2	7.5	7.2	7.8	5.6 U	7.3
	4800-010214-129	B-10	2	5.7 U	6.6 U	7.2 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
Substations	Sub K-C-1	1.1	1.2	6.4	11	2.9	5.9	8.9	2.4	10	
	Sub L-C-1	1.6	4.6	98	64	26	76	42	11	38	
	Berth 305-1	1.3	13	5	7.7	2.5	5.2	8.5	2.9	12	

U = not detected

Table B-6
ProUCL Input Data - Soil
Metal Concentrations in Soil, 0-15 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Chromium	Lead	Nickel	Zinc
Former Hazardous Waste Storage Area									
4800-010129-039	B-48		2	10.7 U	3.5	23.8	6.5	21	53
4800-010129-041	B-49		2	11.3 U	2.8 U	19.3	3.3	25.7	57.1
4800-010130-043	B-50		2	11.6 U	2.9	24.8	8.4	20.8	58.4
4800-010130-045	B-51		2	11.7 U	3.9	29.7	8.8	26.2	66.9
4800-010131-051	B-29		2	10.9 U	2.1	16.6	3.4	18.8	51.3
Building 73									
4800-010131-047	B-30		2	11.8 U	2.2	15.9	3.8	19.8	45.8
4800-010131-049	B-31		2	12.5 U	5.7	34.8	196	31.4	645
Building 43, 50 and 80 Area									
4800-010202-070	B-42		2	11.3 U	2.4	17.3	3.4	22.4	51.3
4800-010202-071	B-42		10	10.7 U	2.4	15.7	2.2	18	49.3
4800-010201-053	B-43		2	11.2 U	2.8	18.6	2.7	20.5	53.7
4800-010202-057	B-44		2	11 U	3.2	16.5	2.6	19.5	50.1
4800-010202-058	B-44		13	10.8 U	2.1	17.4	2.1	18.7	51.9
4800-010201-055	B-45		2	11.3 U	2.9	19.5	6.1	21.7	66.8
4800-010202-063	B-46		2	11.6 U	2	19.6	3.5	22.1	52.4
4800-010202-065	B-46		13	10.8 U	2.2	16.3	2.6	18	50.2
PS-S-14-01	Boring 14		1		2.85	13.7	14.6		
Building 4									
4800-010207-090	B-32		2	11.9 U	2.4	20.7	3.3	22.2	50
4800-010206-087	B-33		2	10.9 U	2.7	26.7	6.7	24.2	62.6
4800-010206-084	B-34		7	11.3 U	2.6	18.6	4.2	22.6	54.3
4800-010206-085	B-34		14	11.2 U	2.2	14.6	3.9	17.8	46
Building 58									
4800-010208-098	B-47		2	11.1 U	2.7	31.4	9.5	20.4	72.9
Paint Shed/Blast Booth Area									
4800-010219-150	B-37		2	11.3 U	3.9	20.9	3.8	23.5	53.3
4800-010215-133	B-38		2	10.7 U	1.7	15.1	2.7	20.4	49.3
4800-010215-135	B-39		2	11.9 U	2.3	29.6	5	29	71.4
4800-010215-136	B-39		10	10.9 U	2.4	15.6	3.1	19.8	51.2
4800-010215-139	B-40		2	10.8 U	1.6	13.7	2	17	48
4800-010215-140	B-40		10	10.9 U	2.1	14.3	2.5	17.7	50
4800-010219-153	B-41		2	11.8 U	2.7	19.2	2.4	23.5	65.2
PS-S-10-01	Boring 10		1		3.46	20.9	7.14		
PS-S-11-01	Boring 11		1		3.65	25.1	8.99		
PS-S-12-01	Boring 12		1		2.92	15.9	5.66		
PS-S-13-01	Boring 13		1		3.67	14.8	6.47		
Electrical Substations									
PS-S-15-01	Boring 15		1.5		1.57	8.1	18.1		
Berth 313									
PS-S-08-01	Boring 8		1		2.13	11.9	5 U		
Berths 304 and 305									
PS-S-16-01	Boring 16		1		2.67	13.5	5 U		
BWTP									
4800-010209-101	B-1		2	11 U	2.8	16.2	10.7	20	61.5
4800-010209-107	B-2		2	11.1 U	3.1	23.1	7.2	23.9	80.9
4800-010212-110	B-3		2	10.8 U	2.7	15.3	25.6	17.7	71.2
4800-010212-112	B-3		15	11.2 U	2.8 U	17.1	2.9	19.6	49.6
4800-010212-116	B-4		2	12 U	3.3	26	5.8	24.3	54.7
4800-010212-118	B-5		2	11.7 U	2.9 U	30.9	265	21.3	433
4800-010213-120	B-6		2	11.3 U	3.2	28.7	29	21.1	94.2
4800-010213-123	B-7		2	11.2 U	3.3	29.8	27	26.7	91.5
4800-010216-148	B-7a		2	11.4 U	3.8	35.4	32.9	27.7	106
4800-010216-149	B-7a		14	10.4 U	3.2	29.5	4.8	28.7	61.7
4800-010213-124	B-8		2	11.3 U	3.8	21.8	24	23.3	85.8
PS-S-09-01	Boring 9		1		1.97	9.88	9.14		
PS-S-09-02	Boring 9		15		4.05	60.8	57		
Building 72									
4800-010214-127	B-9		2	11.3 U	3.8	21.8	24	23.3	85.8
4800-010214-129	B-10		2	11.4 U	1.1 U	17.4	3.6	21	53.6
4800-010216-146	B-11		2	11.4 U	1.1 U	17.4	3.6	21	53.6
4800-010216-144	B-12		2	10.5 U	2.9	16.7	2.6	21.1	53.3
Substations									
Sub K-C-1			1.1	0.26	1.7	10	14	15.6	528
Sub L-C-1			1.6	0.08	2	15.2	4.77	19.3	44.8
Berth 305-1			1.3	0.1	1.7	13.9	4.46	17.3	43.1

U = not detected

Table B-7
ProUCL Input Data - Soil
Polychlorinated Biphenyl (PCB) Concentrations in Soil, 0 - 15 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1260	Total PCBs ^c
Former Hazardous Waste Storage Area					
	4800-010129-039	B-48	2	0.1 U	0.1 U
	4800-010129-041	B-49	2	0.1 U	0.1 U
	4800-010130-043	B-50	2	0.1 U	0.1 U
	4800-010130-045	B-51	2	0.1 U	0.1 U
Building 73					
	4800-010202-070	B-42	2	10 U	10 U
	4800-010202-071	B-42	10	10 U	10 U
	4800-010201-053	B-43	2	10 U	10 U
Building 43, 50 and 80 Area					
	4800-010202-057	B-44	2	10 U	10 U
	4800-010202-058	B-44	13	10 U	10 U
	4800-010201-055	B-45	2	10 U	10 U
	4800-010202-063	B-46	2	10 U	10 U
	4800-010202-065	B-46	13	10 U	10 U
	PS-S-14-01	Boring 14	1	50 U	50 U
	PS-S-11-01	Boring 11	1	50 U	50 U
	PS-S-12-01	Boring 12	1	50 U	50 U
	PS-S-13-01	Boring 13	1	50 U	50 U
Electrical Substations					
	4800-010226-155	S-7	0.75	10 U	10 U
	4800-010226-156	S-8	0.75	10 U	10 U
	4800-010226-157	S-9	0.75	10 U	10 U
	4800-010226-158	S-10	0.75	10	45
	4800-010226-159	S-11	0.75	10 U	10 U
	4800-010226-160	S-12	0.75	12	30
	4800-010226-161	S-13	0.75	10 U	10 U
	4800-010226-162	S-14	0.75	10 U	10 U
	4800-010226-163	S-15	0.75	10 U	10 U
	4800-010226-164	S-16	0.75	10 U	10 U
	4800-010226-165	S-17	0.75	89	94
	4800-010226-166	S-18	0.75	10 U	10 U
	4800-010226-167	S-19	0.75	10 U	10 U
	4800-010226-168	S-20	0.75	10 U	10 U
	4800-010226-169	S-21	0.75	10 U	10 U
	4800-010226-170	S-22	0.75	10 U	10 U
	4800-010226-171	S-23	0.75	10 U	10 U
	4800-010226-172	S-24	0.75	10 U	10 U
	4800-010226-173	S-25	0.75	10 U	10 U
	4800-010226-174	S-26	0.75	10 U	10 U
	4800-010226-175	S-27	0.75	10 U	10 U
	4800-010226-176	S-28	0.75	10 U	10 U
	4800-010226-177	S-29	0.75	10 U	10 U
	4800-010226-178	S-30	0.38	56	176
	4800-010226-179	S-31	0.38	29	78
	4800-010226-180	S-32	0.38	34	103
	4800-010226-181	S-33	0.38	24	59
	4800-010226-182	S-34	0.38	41	124
	4800-010226-183	S-35	0.38	25	91
	4800-010226-184	S-36	0.38	45	135
	4800-010226-185	S-37	0.38	18	53
	4800-010226-186	S-38	0.38	22	84
	4800-010226-187	S-39	0.38	34	144
	4800-010226-188	S-40	0.38	42	47
	4800-010226-189	S-41	0.38	11	34
	4800-010226-190	S-42	0.38	210	215
	4800-010226-191	S-43	0.38	120	125
	4800-010226-192	S-44	0.38	10 U	10 U
	4800-010226-193	S-45	0.38	15	39
	4800-010226-194	S-46	0.38	12	28
	4800-010226-195	S-47	0.38	10 U	10 U
Berths 304 and 305	PS-S-15-01	Boring 15	1.5	50 U	50 U
	PS-S-16-01	Boring 16	1	50 U	50 U

Table B-7
ProUCL Input Data - Soil
Polychlorinated Biphenyl (PCB) Concentrations in Soil, 0 - 15 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1260	Total PCBs ^c
BWTP	4800-010209-101	B-1	2	19	24
	4800-010209-107	B-2	2	10 U	10 U
	4800-010212-110	B-3	2	100	105
	4800-010212-112	B-3	15	10 U	10 U
	4800-010212-116	B-4	2	10 U	10 U
	4800-010212-118	B-5	2	1,600	1650
	4800-010213-120	B-6	2	100	105
	4800-010213-123	B-7	2	520	525
	4800-010216-148	B-7a	2	190	195
	4800-010216-149	B-7a	14	25	91
	4800-010213-124	B-8	2	770	795
	4800-010216-146	B-11	2	160	380
	PS-S-09-01	Boring 9	1	51.3	76
	PS-S-09-02	Boring 9	15	437	462
Building 72	4800-010216-144	B-12	2	10 U	10 U
Substations	Sub B-N-1	2.3	9.9 U	9.9 U	
	Sub B-E-1	2.3	10 U	10 U	
	Sub B-S-1	1.7	9.9 U	9.9 U	
	Sub B-W-1	1.3	77	82	
	Sub D-N-1	1.5	10 U	10 U	
	Sub D-E-1	1.3	10 U	10 U	
	Sub D-S-1	1.5	10 U	10 U	
	Sub D-W-1	1.5	10 U	10 U	
	Sub K-N-1	1.3	19	24	
	Sub K-E-1	1.5	97	102	
	Sub K-S-1	1.7	48	53	
	Sub K-W-1	1.3	9.9 U	9.9 U	
	Sub L-N-1	1.9	10 U	10 U	
	Sub L-E-1	2.2	10 U	10 U	
	Sub L-S-1	1.6	10 U	10 U	
	Sub L-W-1	1.6	9.9 U	9.9 U	
	Sub A-N-1	2.9	9.6 U	9.6 U	
	Sub A-E-1	3.3	9.6 U	9.6 U	
	Sub A-S-1	2.8	9.9 U	9.9 U	
	Sub A-W-1	2.3	10 U	10 U	
	Sub P-N-1	0.8	9.9 U	9.9 U	
	Sub P-E-1	0.9	9.8 U	9.8 U	
	Sub P-S-1	2.0	10 U	10 U	
	Sub P-W-1	0.9	9.9 U	9.9 U	
	Sub Q-N-1	0.8	44	49	
	Sub Q-E-1	1.0	47	52	
	Sub Q-S-1	1.3	10 U	10 U	
	Sub Q-W-1	1.4	48	53	
	Sub R-N-1	1.5	9.7 U	9.7 U	
	Sub R-E-1	1.8	9.8 U	9.8 U	
	Sub R-S-1	1.4	9.8 U	9.8 U	
	Sub R-W-1	1.6	9.9 U	9.9 U	
	Sub M-N-1	1.6	9.9 U	9.9 U	
	Sub M-E-1	1.8	9.9 U	9.9 U	
	Sub M-S-1	0.8	9.9 U	9.9 U	
	Sub M-W-1	1.7	10 U	10 U	
	Sub E-N-1	1.3	10 U	10 U	
	Sub E-E-1	1.1	15	20	
	Sub E-S-1	1.3	10 U	10 U	
	Sub E-W-1	1.3	10 U	10 U	
	Sub F-N-1	1.0	41 U	34 U	
	Sub F-E-1	1.7	10 U	10 U	
	Sub F-S-1	1.3	10 U	10 U	
	Sub F-W-1	1.0	110	115	

U = not detected

^c Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit

for samples with concentrations reported as not detected.

Table B-8
ProUCL Input Data - Soil
Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 15 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Diesel-Range Organics
Former Hazardous Waste Storage Area	4800-010129-039	B-48	2	75 U
	4800-010129-041	B-49	2	68 U
	4800-010130-043	B-50	2	76 U
	4800-010130-045	B-51	2	69 U
Building 73	4800-010131-051	B-29	2	53 U
	4800-010131-047	B-30	2	59 U
	4800-010131-049	B-31	2	62 U
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	55 U
	4800-010202-071	B-42	10	53 U
	4800-010201-053	B-43	2	56 U
	4800-010202-057	B-44	2	53 U
	4800-010202-058	B-44	13	53 U
	4800-010201-055	B-45	2	55 U
	4800-010202-063	B-46	2	56 U
	4800-010202-065	B-46	13	51 U
	4800-010207-090	B-32	2	60 U
Building 4	4800-010206-087	B-33	2	66 U
	4800-010206-084	B-34	7	56 U
	4800-010206-085	B-34	14	55 U
	4800-010208-098	B-47	2	68 U
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	57 U
	4800-010215-133	B-38	2	330
	4800-010215-135	B-39	2	50 U
	4800-010215-136	B-39	10	50 U
	4800-010215-139	B-40	2	27 U
	4800-010215-140	B-40	10	50 U
	4800-010219-153	B-41	2	71 U
Electrical Substations^b	4800-010226-155	S-7	0.75	57
	4800-010226-156	S-8	0.75	27
	4800-010226-157	S-9	0.75	26
	4800-010226-158	S-10	0.75	54
	4800-010226-159	S-11	0.75	29
	4800-010226-160	S-12	0.75	27
	4800-010226-161	S-13	0.75	26
	4800-010226-162	S-14	0.75	27
	4800-010226-163	S-15	0.75	110
	4800-010226-164	S-16	0.75	220
	4800-010226-165	S-17	0.75	250
	4800-010226-166	S-18	0.75	130
	4800-010226-167	S-19	0.75	26
	4800-010226-168	S-20	0.75	27
	4800-010226-169	S-21	0.75	27
	4800-010226-170	S-22	0.75	55
	4800-010226-171	S-23	0.75	50 U
	4800-010226-172	S-24	0.75	50 U
	4800-010226-173	S-25	0.75	29
	4800-010226-174	S-26	0.75	27
	4800-010226-175	S-27	0.75	26
	4800-010226-176	S-28	0.75	50 U
	4800-010226-177	S-29	0.75	26
	4800-010226-178	S-30	0.38	27
	4800-010226-179	S-31	0.38	50 U
	4800-010226-180	S-32	0.38	50 U
	4800-010226-181	S-33	0.38	25 U
	4800-010226-182	S-34	0.38	60
	4800-010226-183	S-35	0.38	50 U
	4800-010226-184	S-36	0.38	26 U
	4800-010226-185	S-37	0.38	50 U
	4800-010226-186	S-38	0.38	50 U
	4800-010226-187	S-39	0.38	25 U
	4800-010226-188	S-40	0.38	50 U
	4800-010226-189	S-41	0.38	50 U
	4800-010226-190	S-42	0.38	50 U
	4800-010226-191	S-43	0.38	50 U
	4800-010226-192	S-44	0.38	50 U
	4800-010226-193	S-45	0.38	50 U
	4800-010226-194	S-46	0.38	50 U
	4800-010226-195	S-47	0.38	26 U

Table B-8

ProUCL Input Data - Soil

Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 15 Ft (mg/kg)

Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Diesel-Range Organics
BWTP	4800-010209-101	B-1	2	50 U
	4800-010209-107	B-2	2	50 U
	4800-010212-110	B-3	2	45
	4800-010212-112	B-3	15	15,000
	4800-010212-116	B-4	2	50 U
	4800-010212-118	B-5	2	170
	4800-010213-120	B-6	2	28 U
	4800-010216-148	B-7a	2	50 U
	4800-010216-149	B-7a	14	72
	4800-010213-124	B-8	2	50 U
Building 72	4800-010214-127	B-9	2	50 U
	4800-010214-129	B-10	2	28 U
	4800-010216-146	B-11	2	50 U
	4800-010216-144	B-12	2	50 U
Substations	Sub B-N-1	2.3	67 U	
	Sub B-E-1	2.3	62 U	
	Sub B-S-1	1.7	54 U	
	Sub B-W-1	1.3	55 U	
	Sub D-N-1	1.5	58 U	
	Sub D-E-1	1.3	54 U	
	Sub D-S-1	1.5	58 U	
	Sub D-W-1	1.5	57 U	
	Sub K-N-1	1.3	55 U	
	Sub K-E-1	1.5	56 U	
	Sub K-S-1	1.7	55 U	
	Sub K-W-1	1.3	54 U	
	Sub L-N-1	1.9	55 U	
	Sub L-E-1	2.2	65 U	
	Sub L-S-1	1.6	57 U	
	Sub L-W-1	1.6	57 U	
	Sub A-N-1	2.9	54 U	
	Sub A-E-1	3.3	54 U	
	Sub A-S-1	2.8	55 U	
	Sub A-W-1	2.3	59 U	
	Sub P-N-1	0.8	63 U	
	Sub P-E-1	0.9	55 U	
	Sub P-S-1	2.0	71 U	
	Sub P-W-1	0.9	62 U	
	Sub Q-N-1	0.8	50 U	
	Sub Q-E-1	1.0	50 U	
	Sub Q-S-1	1.3	50 U	
	Sub Q-W-1	1.4	50 U	
	Sub R-N-1	1.5	68 U	
	Sub R-E-1	1.8	59 U	
	Sub R-S-1	1.4	60 U	
	Sub R-W-1	1.6	66 U	
	Sub M-N-1	1.6	54 U	
	Sub M-E-1	1.8	54 U	
	Sub M-S-1	0.8	55 U	
	Sub M-W-1	1.7	55 U	
	Sub E-N-1	1.3	67 U	
	Sub E-E-1	1.1	67 U	
	Sub E-S-1	1.3	60 U	
	Sub E-W-1	1.3	64 U	
	Sub F-N-1	1.0	58 U	
	Sub F-E-1	1.7	58 U	
	Sub F-S-1	1.3	58 U	
	Sub F-W-1	1.0	63 U	

U = not detected

Table B-9
ProUCL Input Data - Soil
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil, 0 - 15 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	Benz(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
Area	4800-010129-039	B-48	2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	8.2	8.7	6.8 U	9.4
Building 73	4800-010131-049	B-31	2	6.2 U	55	63	61	61	44	8.5	36
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	7.6	5.6 U	9.5
	4800-010202-071	B-42	10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-057	B-44	2	5.5 U	8.1	5.5 U	7.2	8.1	7.9	5.5 U	7.6
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-063	B-46	2	5.8 U	5.8 U	8.5	7.8	7.9	9.1	5.8 U	9.2
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
	4800-010206-085	B-34	14	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Building 58	4800-010208-098	B-47	2	6.8 U	14	16	14	15	16	6.8 U	16
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	15	14	5.3 U	5.3 U	9.4	5.3 U	6.3	19
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-140	B-40	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Electrical Substations	4800-010226-155	S-7	0.75	5.8	5.8	7.9	5.8	5.8	5.8	5.8	13
	4800-010226-161	S-13	0.75	5.3	6.1	5.3	5.3	5.3	5.3	5.3	9.7
	4800-010226-163	S-15	0.75	5.4	5.4	5.4	5.4	5.4	5.4	5.4	7.8
	4800-010226-164	S-16	0.75	5.3	5.7	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-165	S-17	0.75	54	54	75	62	58	55	54	72
	4800-010226-170	S-22	0.75	5.9	17	29	31	31	35	9.2	36
	4800-010226-175	S-27	0.75	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	4800-010226-177	S-29	0.75	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-181	S-33	0.38	10	220	320	280	270	250	54	230
BWTP	4800-010209-101	B-1	2	5.5 U	17	21	17	22	25	5.5 U	24
	4800-010212-110	B-3	2	5.4 U	8.4	12	12	15	17	5.4 U	19
	4800-010212-112	B-3	15	99	8.4 U	12 U	56 U	56 U	56 U	56 U	19 U
	4800-010212-118	B-5	2	10	17	24	19	18	19	5.9 U	24
	4800-010216-148	B-7a	2	6.2 U	30	33	32	34	34	7.4	31
	4800-010216-149	B-7a	14	25	160	180	150	160	130	31	120
Building 73	4800-010214-127	B-9	2	5.6 U	7.4	7.2	7.5	7.2	7.8	5.6 U	7.3
	4800-010214-129	B-10	2	5.7 U	6.6 U	7.2 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
Substations	Sub K-C-1	1.1	1.2	6.4	11	2.9	5.9	8.9	2.4	10	
	Sub L-C-1	1.6	4.6	98	64	26	76	42	11	38	
	Berth 305-1	1.3	13	5	7.7	2.5	5.2	8.5	2.9	12	

U = not detected

Table B-10
ProUCL Input Data - Soil
Metal Concentrations in Soil, 0-30 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Chromium	Lead	Nickel	Zinc
Former Hazardous Waste Storage Area									
	4800-010129-039	B-48	2	10.7 U	3.5	23.8	6.5	21	53
	4800-010129-040	B-48	29	10.7 U	3.1	21.9	5.2	21.9	55.1
	4800-010129-041	B-49	2	11.3 U	2.8 U	19.3	3.3	25.7	57.1
	4800-010129-042	B-49	29	11.8 U	3.1	23.8	4.4	27.1	56.1
	4800-010130-043	B-50	2	11.6 U	2.9	24.8	8.4	20.8	58.4
	4800-010130-044	B-50	30	10.7 U	3.2	24.3	4.7	25.8	54.9
	4800-010130-045	B-51	2	11.7 U	3.9	29.7	8.8	26.2	66.9
	4800-010130-046	B-51	30	10.3 U	3	26.6	5.1	24.6	57.3
	4800-010131-051	B-29	2	10.9 U	2.1	16.6	3.4	18.8	51.3
	4800-010201-052	B-29	29	10.6 U	2.1	33.2	4.2	29.2	69.7
Building 73									
	4800-010131-047	B-30	2	11.8 U	2.2	15.9	3.8	19.8	45.8
	4800-010131-048	B-30	30	11.6 U	3.1	37.6	5	30.3	68.7
	4800-010131-049	B-31	2	12.5 U	5.7	34.8	196	31.4	645
	4800-010131-050	B-31	30	11 U	2.2	26.7	6.3	24.8	73.2
Building 43, 50 and 80 Area									
	4800-010202-070	B-42	2	11.3 U	2.4	17.3	3.4	22.4	51.3
	4800-010202-071	B-42	10	10.7 U	2.4	15.7	2.2	18	49.3
	4800-010201-053	B-43	2	11.2 U	2.8	18.6	2.7	20.5	53.7
	4800-010201-054	B-43	29	11.6 U	2.6	15.6	4.7	17.7	48
	4800-010202-057	B-44	2	11 U	3.2	16.5	2.6	19.5	50.1
	4800-010202-058	B-44	13	10.8 U	2.1	17.4	2.1	18.7	51.9
	4800-010201-055	B-45	2	11.3 U	2.9	19.5	6.1	21.7	66.8
	4800-010201-056	B-45	29	11.4 U	2.7	29.5	4.2	28.2	62
	4800-010202-063	B-46	2	11.6 U	2	19.6	3.5	22.1	52.4
	4800-010202-065	B-46	13	10.8 U	2.2	16.3	2.6	18	50.2
	PS-S-14-01	Boring 14	1		2.85	13.7	14.6		
	PS-S-14-02	Boring 14	17		2.02	11.7	5 U		
Building 4									
	4800-010207-090	B-32	2	11.9 U	2.4	20.7	3.3	22.2	50
	4800-010207-092	B-32	30	10.5 U	2	16.8	4	19.8	47.4
	4800-010206-087	B-33	2	10.9 U	2.7	26.7	6.7	24.2	62.6
	4800-010206-089	B-33	30	11.3 U	3.3	27.7	4.9	26.5	62.2
	4800-010206-084	B-34	7	11.3 U	2.6	18.6	4.2	22.6	54.3
	4800-010206-085	B-34	14	11.2 U	2.2	14.6	3.9	17.8	46
	4800-010207-094	B-35	24.5	11.4 U	3.6	39.5	19.8	32.6	91.5
Building 58									
	4800-010208-098	B-47	2	11.1 U	2.7	31.4	9.5	20.4	72.9
	4800-010208-099	B-47	29	11.3 U	3.4	37.5	5.9	29.6	68.5
Paint Shed/Blast Booth Area									
	4800-010219-150	B-37	2	11.3 U	3.9	20.9	3.8	23.5	53.3
	4800-010219-151	B-37	30	10.2 U	3.3	35.4	3.7	31.9	71.6
	4800-010215-133	B-38	2	10.7 U	1.7	15.1	2.7	20.4	49.3
	4800-010215-134	B-38	30	11.6 U	3.3	35	5.6	28.9	67.3
	4800-010215-135	B-39	2	11.9 U	2.3	29.6	5	29	71.4
	4800-010215-136	B-39	10	10.9 U	2.4	15.6	3.1	19.8	51.2
	4800-010215-139	B-40	2	10.8 U	1.6	13.7	2	17	48
	4800-010215-140	B-40	10	10.9 U	2.1	14.3	2.5	17.7	50
	4800-010219-153	B-41	2	11.8 U	2.7	19.2	2.4	23.5	65.2
	4800-010219-154	B-41	27	11.6 U	3.4	33.5	4.5	31.5	67.7
	PS-S-10-01	Boring 10	1		3.46	20.9	7.14		
	PS-S-10-02	Boring 10	17		3.6	25.3	9.67		
	PS-S-11-01	Boring 11	1		3.65	25.1	8.99		
	PS-S-11-02	Boring 11	17		2.48	15.9	5 U		
	PS-S-12-01	Boring 12	1		2.92	15.9	5.66		
	PS-S-12-02	Boring 12	17		2.19	13.9	5 U		
	PS-S-13-01	Boring 13	1		3.67	14.8	6.47		
	PS-S-13-02	Boring 13	17		2.14	10.6	5 U		
Electrical Substations									
	PS-S-15-01	Boring 15	1.5		1.57	8.1	18.1		
	PS-S-15-02	Boring 15	17		1.19	7.51	5 U		
Berth 313									
	PS-S-08-01	Boring 8	1		2.13	11.9	5 U		
	PS-S-08-02	Boring 8	17		2.52	12.4	5 U		
Berths 304 and 305									
	PS-S-16-01	Boring 16	1		2.67	13.5	5 U		
	PS-S-16-02	Boring 16	17		1.88	10.2	5 U		

Table B-10
ProUCL Input Data - Soil
Metal Concentrations in Soil, 0-30 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Antimony	Arsenic	Chromium	Lead	Nickel	Zinc
BWTP	4800-010209-101	B-1	2	11 U	2.8	16.2	10.7	20	61.5
	4800-010209-103	B-1	21	17.1	5.4	48.3	541	28.9	267
	4800-010209-107	B-2	2	11.1 U	3.1	23.1	7.2	23.9	80.9
	4800-010212-109	B-2	21	10.4 U	3	19.7	4.3	25.4	54.1
	4800-010212-110	B-3	2	10.8 U	2.7	15.3	25.6	17.7	71.2
	4800-010212-112	B-3	15	11.2 U	2.8 U	17.1	2.9	19.6	49.6
	4800-010212-116	B-4	2	12 U	3.3	26	5.8	24.3	54.7
	4800-010212-117	B-4	29	10.3 U	3.3	29.9	6.2	27.4	58.6
	4800-010212-118	B-5	2	11.7 U	2.9 U	30.9	265	21.3	433
	4800-010212-119	B-5	29	11.8 U	3.6	36.5	6.3	32.9	68.2
	4800-010213-120	B-6	2	11.3 U	3.2	28.7	29	21.1	94.2
	4800-010213-121	B-6	29	10.6 U	2.7	25.6	6.6	19.1	67.1
	4800-010213-123	B-7	2	11.2 U	3.3	29.8	27	26.7	91.5
	4800-010216-148	B-7a	2	11.4 U	3.8	35.4	32.9	27.7	106
	4800-010216-149	B-7a	14	10.4 U	3.2	29.5	4.8	28.7	61.7
	4800-010213-124	B-8	2	11.3 U	3.8	21.8	24	23.3	85.8
	4800-010214-126	B-8	30	12.1 U	3	43.6	16.4	25	88.5
	PS-S-09-01	Boring 9	1		1.97	9.88	9.14		
	PS-S-09-02	Boring 9	15		4.05	60.8	57		
Building 72	4800-010214-127	B-9	2	11.3 U	3.8	21.8	24	23.3	85.8
	4800-010214-128	B-9	26	12 U	2.7	23	8.1	18.9	70.6
	4800-010214-129	B-10	2	11.4 U	1.1 U	17.4	3.6	21	53.6
	4800-010214-130	B-10	16	12.3 U	1.2 U	16	3.6	18.2	50.2
	4800-010216-146	B-11	2	11.4 U	1.1 U	17.4	3.6	21	53.6
	4800-010216-147	B-11	29	21.1	16	311	871	91.4	947
	4800-010216-144	B-12	2	10.5 U	2.9	16.7	2.6	21.1	53.3
	4800-010216-145	B-12	30	11.5 U	3.4	31.3	4.3	29.6	65.5
Substations	Sub K-C-1	1.1	0.26	1.7	10	14	15.6	528	
	Sub L-C-1	1.6	0.08	2	15.2	4.77	19.3	44.8	
	Berth 305-1	1.3	0.1	1.7	13.9	4.46	17.3	43.1	

U = not detected

Table B-11
ProUCL Input Data - Soil
Polychlorinated Biphenyl (PCB) Concentrations in Soil, 0 - 30 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1260	Total PCBs ^c
Former Hazardous Waste Storage Area	4800-010129-039	B-48	2	0.1 U	0.1 U
	4800-010129-040	B-48	29	0.1 U	0.1 U
	4800-010129-041	B-49	2	0.1 U	0.1 U
	4800-010129-042	B-49	29	0.1 U	0.1 U
	4800-010130-043	B-50	2	0.1 U	0.1 U
	4800-010130-044	B-50	30	0.1 U	0.1 U
	4800-010130-045	B-51	2	0.1 U	0.1 U
	4800-010130-046	B-51	30	0.1 U	0.1 U
Building 73	4800-010201-052	B-29	29	10 U	10 U
	4800-010202-070	B-42	2	10 U	10 U
	4800-010202-071	B-42	10	10 U	10 U
	4800-010201-053	B-43	2	10 U	10 U
	4800-010201-054	B-43	29	10 U	10 U
Building 43, 50 and 80 Area	4800-010202-057	B-44	2	10 U	10 U
	4800-010202-058	B-44	13	10 U	10 U
	4800-010201-055	B-45	2	10 U	10 U
	4800-010201-056	B-45	29	10 U	10 U
	4800-010202-063	B-46	2	10 U	10 U
	4800-010202-065	B-46	13	10 U	10 U
	PS-S-14-01	Boring 14	1	50 U	50 U
	PS-S-14-02	Boring 14	17	50 U	50 U
	PS-S-11-01	Boring 11	1	50 U	50 U
	PS-S-11-02	Boring 11	17	50 U	50 U
	PS-S-12-01	Boring 12	1	50 U	50 U
	PS-S-12-02	Boring 12	17	50 U	50 U
	PS-S-13-01	Boring 13	1	50 U	50 U
	PS-S-13-02	Boring 13	17	50 U	50 U
Electrical Substations	4800-010226-155	S-7	0.75	10 U	10 U
	4800-010226-156	S-8	0.75	10 U	10 U
	4800-010226-157	S-9	0.75	10 U	10 U
	4800-010226-158	S-10	0.75	10	45
	4800-010226-159	S-11	0.75	10 U	10 U
	4800-010226-160	S-12	0.75	12	30
	4800-010226-161	S-13	0.75	10 U	10 U
	4800-010226-162	S-14	0.75	10 U	10 U
	4800-010226-163	S-15	0.75	10 U	10 U
	4800-010226-164	S-16	0.75	10 U	10 U
	4800-010226-165	S-17	0.75	89	94
	4800-010226-166	S-18	0.75	10 U	10 U
	4800-010226-167	S-19	0.75	10 U	10 U
	4800-010226-168	S-20	0.75	10 U	10 U
	4800-010226-169	S-21	0.75	10 U	10 U
	4800-010226-170	S-22	0.75	10 U	10 U
	4800-010226-171	S-23	0.75	10 U	10 U
	4800-010226-172	S-24	0.75	10 U	10 U
	4800-010226-173	S-25	0.75	10 U	10 U
	4800-010226-174	S-26	0.75	10 U	10 U
	4800-010226-175	S-27	0.75	10 U	10 U
	4800-010226-176	S-28	0.75	10 U	10 U
	4800-010226-177	S-29	0.75	10 U	10 U
	4800-010226-178	S-30	0.38	56	176
	4800-010226-179	S-31	0.38	29	78
	4800-010226-180	S-32	0.38	34	103
	4800-010226-181	S-33	0.38	24	59
	4800-010226-182	S-34	0.38	41	124
	4800-010226-183	S-35	0.38	25	91
	4800-010226-184	S-36	0.38	45	135
	4800-010226-185	S-37	0.38	18	53
	4800-010226-186	S-38	0.38	22	84
	4800-010226-187	S-39	0.38	34	144
	4800-010226-188	S-40	0.38	42	47
	4800-010226-189	S-41	0.38	11	34
	4800-010226-190	S-42	0.38	210	215
	4800-010226-191	S-43	0.38	120	125
	4800-010226-192	S-44	0.38	10 U	10 U
	4800-010226-193	S-45	0.38	15	39
	4800-010226-194	S-46	0.38	12	28
	4800-010226-195	S-47	0.38	10 U	10 U
	PS-S-15-01	Boring 15	1.5	50 U	50 U
	PS-S-15-02	Boring 15	17	50 U	50 U

Table B-11
ProUCL Input Data - Soil
Polychlorinated Biphenyl (PCB) Concentrations in Soil, 0 - 30 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Aroclor 1260	Total PCBs ^c
Berths 304 and 305	PS-S-16-01	Boring 16	1	50 U	50 U
	PS-S-16-02	Boring 16	17	50 U	50 U
BWTP	4800-010209-101	B-1	2	19	24
	4800-010209-103	B-1	21	370	375
	4800-010209-107	B-2	2	10 U	10 U
	4800-010212-109	B-2	21	10 U	10 U
	4800-010212-110	B-3	2	100	105
	4800-010212-112	B-3	15	10 U	10 U
	4800-010212-116	B-4	2	10 U	10 U
	4800-010212-117	B-4	29	10 U	10 U
	4800-010212-118	B-5	2	1,600	1650
	4800-010212-119	B-5	29	10 U	10 U
	4800-010213-120	B-6	2	100	105
	4800-010213-121	B-6	29	10 U	10 U
	4800-010213-123	B-7	2	520	525
	4800-010216-148	B-7a	2	190	195
	4800-010216-149	B-7a	14	25	91
	4800-010213-124	B-8	2	770	795
	4800-010214-126	B-8	30	10 U	10 U
	4800-010216-146	B-11	2	160	380
	4800-010216-147	B-11	29	25	51
Building 72	PS-S-09-01	Boring 9	1	51.3	76
	PS-S-09-02	Boring 9	15	437	462
Building 72	4800-010216-144	B-12	2	10 U	10 U
	4800-010216-145	B-12	30	10 U	10 U
Substations	Sub B-N-1	2.3	9.9 U	9.9 U	
	Sub B-E-1	2.3	10 U	10 U	
	Sub B-S-1	1.7	9.9 U	9.9 U	
	Sub B-W-1	1.3	77	82	
	Sub D-N-1	1.5	10 U	10 U	
	Sub D-E-1	1.3	10 U	10 U	
	Sub D-S-1	1.5	10 U	10 U	
	Sub D-W-1	1.5	10 U	10 U	
	Sub K-N-1	1.3	19	24	
	Sub K-E-1	1.5	97	102	
	Sub K-S-1	1.7	48	53	
	Sub K-W-1	1.3	9.9 U	9.9 U	
	Sub L-N-1	1.9	10 U	10 U	
	Sub L-E-1	2.2	10 U	10 U	
	Sub L-S-1	1.6	10 U	10 U	
	Sub L-W-1	1.6	9.9 U	9.9 U	
	Sub A-N-1	2.9	9.6 U	9.6 U	
	Sub A-E-1	3.3	9.6 U	9.6 U	
	Sub A-S-1	2.8	9.9 U	9.9 U	
	Sub A-W-1	2.3	10 U	10 U	
	Sub P-N-1	0.8	9.9 U	9.9 U	
	Sub P-E-1	0.9	9.8 U	9.8 U	
	Sub P-S-1	2.0	10 U	10 U	
	Sub P-W-1	0.9	9.9 U	9.9 U	
	Sub Q-N-1	0.8	44	49	
	Sub Q-E-1	1.0	47	52	
	Sub Q-S-1	1.3	10 U	10 U	
	Sub Q-W-1	1.4	48	53	
	Sub R-N-1	1.5	9.7 U	9.7 U	
	Sub R-E-1	1.8	9.8 U	9.8 U	
	Sub R-S-1	1.4	9.8 U	9.8 U	
	Sub R-W-1	1.6	9.9 U	9.9 U	
	Sub M-N-1	1.6	9.9 U	9.9 U	
	Sub M-E-1	1.8	9.9 U	9.9 U	
	Sub M-S-1	0.8	9.9 U	9.9 U	
	Sub M-W-1	1.7	10 U	10 U	
	Sub E-N-1	1.3	10 U	10 U	
	Sub E-E-1	1.1	15	20	
	Sub E-S-1	1.3	10 U	10 U	
	Sub E-W-1	1.3	10 U	10 U	
	Sub F-N-1	1.0	41 U	34 U	
	Sub F-E-1	1.7	10 U	10 U	
	Sub F-S-1	1.3	10 U	10 U	
	Sub F-W-1	1.0	110	115	

U = not detected

^c Sum of the Aroclor 1254 and 1260 concentrations, using one-half the detection limit for samples with concentrations reported as not detected.

Table B-12
ProUCL Input Data - Soil
Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 30 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Diesel-Range Organics
Former Hazardous Waste Storage Area	4800-010129-039	B-48	2	75 U
	4800-010129-040	B-48	29	64 U
	4800-010129-041	B-49	2	68 U
	4800-010129-042	B-49	29	70 U
	4800-010130-043	B-50	2	76 U
	4800-010130-044	B-50	30	64 U
	4800-010130-045	B-51	2	69 U
	4800-010130-046	B-51	30	71 U
Building 73	4800-010131-051	B-29	2	53 U
	4800-010201-052	B-29	29	74 U
	4800-010131-047	B-30	2	59 U
	4800-010131-048	B-30	30	69 U
	4800-010131-049	B-31	2	62 U
	4800-010131-050	B-31	30	76 U
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	55 U
	4800-010202-071	B-42	10	53 U
	4800-010202-074	B-42	30	63 U
	4800-010201-053	B-43	2	56 U
	4800-010201-054	B-43	29	58 U
	4800-010202-057	B-44	2	53 U
	4800-010202-058	B-44	13	53 U
	4800-010202-062	B-44	30	65 U
	4800-010201-055	B-45	2	55 U
	4800-010201-056	B-45	29	140 U
	4800-010202-063	B-46	2	56 U
	4800-010202-065	B-46	13	51 U
	4800-010202-069	B-46	30	84 U
Building 4	4800-010207-090	B-32	2	60 U
	4800-010207-092	B-32	30	64 U
	4800-010206-087	B-33	2	66 U
	4800-010206-089	B-33	30	66 U
	4800-010206-084	B-34	7	56 U
	4800-010206-085	B-34	14	55 U
	4800-010207-094	B-35	24.5	81 U
Building 58	4800-010208-098	B-47	2	68 U
	4800-010208-099	B-47	29	69 U
Paint Shed/Blast Booth Area	4800-010219-150	B-37	2	57 U
	4800-010219-151	B-37	30	73 U
	4800-010215-133	B-38	2	330
	4800-010215-134	B-38	30	50 U
	4800-010215-135	B-39	2	50 U
	4800-010215-136	B-39	10	50 U
	4800-010215-139	B-40	2	27 U
	4800-010215-140	B-40	10	50 U
	4800-010215-142	B-40	18	31 U
	4800-010219-153	B-41	2	71 U
	4800-010219-154	B-41	27	140 U

Table B-12
ProUCL Input Data - Soil
Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 30 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Diesel-Range Organics
Electrical Substations^b	4800-010226-155	S-7	0.75	57
	4800-010226-156	S-8	0.75	27
	4800-010226-157	S-9	0.75	26
	4800-010226-158	S-10	0.75	54
	4800-010226-159	S-11	0.75	29
	4800-010226-160	S-12	0.75	27
	4800-010226-161	S-13	0.75	26
	4800-010226-162	S-14	0.75	27
	4800-010226-163	S-15	0.75	110
	4800-010226-164	S-16	0.75	220
	4800-010226-165	S-17	0.75	250
	4800-010226-166	S-18	0.75	130
	4800-010226-167	S-19	0.75	26
	4800-010226-168	S-20	0.75	27
	4800-010226-169	S-21	0.75	27
	4800-010226-170	S-22	0.75	55
	4800-010226-171	S-23	0.75	50 U
	4800-010226-172	S-24	0.75	50 U
	4800-010226-173	S-25	0.75	29
	4800-010226-174	S-26	0.75	27
	4800-010226-175	S-27	0.75	26
	4800-010226-176	S-28	0.75	50 U
	4800-010226-177	S-29	0.75	26
	4800-010226-178	S-30	0.38	27
	4800-010226-179	S-31	0.38	50 U
	4800-010226-180	S-32	0.38	50 U
	4800-010226-181	S-33	0.38	25 U
	4800-010226-182	S-34	0.38	60
	4800-010226-183	S-35	0.38	50 U
	4800-010226-184	S-36	0.38	26 U
	4800-010226-185	S-37	0.38	50 U
	4800-010226-186	S-38	0.38	50 U
	4800-010226-187	S-39	0.38	25 U
	4800-010226-188	S-40	0.38	50 U
	4800-010226-189	S-41	0.38	50 U
	4800-010226-190	S-42	0.38	50 U
	4800-010226-191	S-43	0.38	50 U
	4800-010226-192	S-44	0.38	50 U
	4800-010226-193	S-45	0.38	50 U
	4800-010226-194	S-46	0.38	50 U
	4800-010226-195	S-47	0.38	26 U
BWTP	4800-010209-101	B-1	2	50 U
	4800-010209-103	B-1	21	330
	4800-010209-105	B-2	30	77
	4800-010209-107	B-2	2	50 U
	4800-010212-109	B-2	21	50 U
	4800-010212-110	B-3	2	45
	4800-010212-112	B-3	15	15,000
	4800-010212-114	B-3	22	29 U
	4800-010212-116	B-4	2	50 U
	4800-010212-117	B-4	29	50 U
	4800-010212-118	B-5	2	170
	4800-010212-119	B-5	29	50 U
	4800-010213-120	B-6	2	28 U
	4800-010213-121	B-6	29	50 U
	4800-010216-148	B-7a	2	50 U
	4800-010216-149	B-7a	14	72
	4800-010213-124	B-8	2	50 U
	4800-010214-126	B-8	30	50 U

Table B-12
ProUCL Input Data - Soil
Total Petroleum Hydrocarbon Concentrations in Soil, 0 - 30 Ft (mg/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Diesel-Range Organics
Building 72	4800-010214-127	B-9	2	50 U
	4800-010214-128	B-9	26	50 U
	4800-010214-129	B-10	2	28 U
	4800-010214-130	B-10	16	110
	4800-010214-131	B-10	18	29 U
	4800-010216-146	B-11	2	50 U
	4800-010216-147	B-11	29	50 U
	4800-010216-144	B-12	2	50 U
	4800-010216-145	B-12	30	50 U
Substations	Sub B-N-1	2.3	67 U	
	Sub B-E-1	2.3	62 U	
	Sub B-S-1	1.7	54 U	
	Sub B-W-1	1.3	55 U	
	Sub D-N-1	1.5	58 U	
	Sub D-E-1	1.3	54 U	
	Sub D-S-1	1.5	58 U	
	Sub D-W-1	1.5	57 U	
	Sub K-N-1	1.3	55 U	
	Sub K-E-1	1.5	56 U	
	Sub K-S-1	1.7	55 U	
	Sub K-W-1	1.3	54 U	
	Sub L-N-1	1.9	55 U	
	Sub L-E-1	2.2	65 U	
	Sub L-S-1	1.6	57 U	
	Sub L-W-1	1.6	57 U	
	Sub A-N-1	2.9	54 U	
	Sub A-E-1	3.3	54 U	
	Sub A-S-1	2.8	55 U	
	Sub A-W-1	2.3	59 U	
	Sub P-N-1	0.8	63 U	
	Sub P-E-1	0.9	55 U	
	Sub P-S-1	2.0	71 U	
	Sub P-W-1	0.9	62 U	
	Sub Q-N-1	0.8	50 U	
	Sub Q-E-1	1.0	50 U	
	Sub Q-S-1	1.3	50 U	
	Sub Q-W-1	1.4	50 U	
	Sub R-N-1	1.5	68 U	
	Sub R-E-1	1.8	59 U	
	Sub R-S-1	1.4	60 U	
	Sub R-W-1	1.6	66 U	
	Sub M-N-1	1.6	54 U	
	Sub M-E-1	1.8	54 U	
	Sub M-S-1	0.8	55 U	
	Sub M-W-1	1.7	55 U	
	Sub E-N-1	1.3	67 U	
	Sub E-E-1	1.1	67 U	
	Sub E-S-1	1.3	60 U	
	Sub E-W-1	1.3	64 U	
	Sub F-N-1	1.0	58 U	
	Sub F-E-1	1.7	58 U	
	Sub F-S-1	1.3	58 U	
	Sub F-W-1	1.0	63 U	

U = not detected

Table B-13
ProUCL Input Data - Soil
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Soil, 0 - 30 Ft (ug/kg)
Swan Island Upland Facility

Area of Interest	Sample No.	Sample Location	Sample Depth (ft)	Naphthalene	Benz(a)anthracene	Benz(b)fluoranthene	Benz(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
Area	4800-010129-039	B-48	2	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
	4800-010129-040	B-48	29	6.4 U	8	6.4 U	6.4 U	6.6	6.4 U	6.4 U	6.4 U
	4800-010130-043	B-50	2	6.8 U	6.8 U	6.8 U	6.8 U	8.2	8.7	6.8 U	9.4
	4800-010130-044	B-50	30	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
	4800-010130-046	B-51	30	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
Building 73	4800-010131-049	B-31	2	6.2 U	55	63	61	61	44	8.5	36
	4800-010131-050	B-31	30	7.7 U	10	10	11	14	12	7.7 U	14
Building 43, 50 and 80 Area	4800-010202-070	B-42	2	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	7.6	5.6 U	9.5
	4800-010202-071	B-42	10	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-057	B-44	2	5.5 U	8.1	5.5 U	7.2	8.1	7.9	5.5 U	7.6
	4800-010202-058	B-44	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010202-063	B-46	2	5.8 U	5.8 U	8.5	7.8	7.9	9.1	5.8 U	9.2
	4800-010202-065	B-46	13	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
Building 4	4800-010207-090	B-32	2	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U
	4800-010207-092	B-32	30	6.4 U	8.5	6.4 U	6.4 U	7.4	6.4 U	6.4 U	6.4 U
	4800-010206-087	B-33	2	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
	4800-010206-085	B-34	14	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Buiding 58	4800-010208-098	B-47	2	6.8 U	14	16	14	15	16	6.8 U	16
	4800-010208-099	B-47	29	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
Paint Shed/Blast Booth Area	4800-010215-133	B-38	2	15	14	5.3 U	5.3 U	9.4	5.3 U	6.3	19
	4800-010215-134	B-38	30	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U
	4800-010215-135	B-39	2	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U	7.1 U
	4800-010215-136	B-39	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
	4800-010215-139	B-40	2	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U	5.4 U
	4800-010215-140	B-40	10	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Electrical Substations	4800-010226-155	S-7	0.75	5.8	5.8	7.9	5.8	5.8	5.8	5.8	13
	4800-010226-161	S-13	0.75	5.3	6.1	5.3	5.3	5.3	5.3	5.3	9.7
	4800-010226-163	S-15	0.75	5.4	5.4	5.4	5.4	5.4	5.4	5.4	7.8
	4800-010226-164	S-16	0.75	5.3	5.7	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-165	S-17	0.75	54	54	75	62	58	55	54	72
	4800-010226-170	S-22	0.75	5.9	17	29	31	31	35	9.2	36
	4800-010226-175	S-27	0.75	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
	4800-010226-177	S-29	0.75	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
	4800-010226-181	S-33	0.38	10	220	320	280	270	250	54	230
	4800-010226-195	S-47	0.38	5.3 U	12	24	20	22	28	5.3 U	29
BWTP	4800-010209-101	B-1	2	5.5 U	17	21	17	22	25	5.5 U	24
	4800-010209-103	B-1	21	150	310	250	190	230	290	50	300
	4800-010212-110	B-3	2	5.4 U	8.4	12	12	15	17	5.4 U	19
	4800-010212-112	B-3	15	99	8.4 U	12 U	56 U	56 U	56 U	56 U	19 U
	4800-010212-118	B-5	2	10	17	24	19	18	19	5.9 U	24
	4800-010212-119	B-5	29	7.1 U	17 U	24 U	7.1 U	7.1 U	7.1 U	7.1 U	24 U
	4800-010216-148	B-7a	2	6.2 U	30	33	32	34	34	7.4	31
	4800-010216-149	B-7a	14	25	160	180	150	160	130	31	120
	4800-010214-126	B-8	30	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U	7.3 U
Building 73	4800-010214-127	B-9	2	5.6 U	7.4	7.2	7.5	7.2	7.8	5.6 U	7.3
	4800-010214-128	B-9	26	6.1 U	6.6	7.2 U	6.1 U	6.1 U	6.1 U	6.1 U	7.3 U
	4800-010214-129	B-10	2	5.7 U	6.6 U	7.2 U	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U
	4800-010214-130	B-10	15.5	15	69	53	61	62	49	10	44
Substations	Sub K-C-1	1.1	1.2	6.4	11	2.9	5.9	8.9	2.4	10	
	Sub L-C-1	1.6	4.6	98	64	26	76	42	11	38	
	Berth 305-1	1.3	13	5	7.7	2.5	5.2	8.5	2.9	12	

U = not detected

Soil Calculations

General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Projects\Port of Portland\Upland Source Control Sites\Shipyard (Swan Is Upland Facility)\Reports and
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Diesel - Soil, 0-3 Ft (mg/kg)

General Statistics			
Number of Valid Observations	117	Number of Distinct Observations	36
Raw Statistics			
Minimum	12.5	Minimum of Log Data	2.526
Maximum	330	Maximum of Log Data	5.799
Mean	37.26	Mean of log Data	3.412
Median	27.5	SD of log Data	0.502
SD	42.62		
Coefficient of Variation	1.144		
Skewness	5.004		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.405	Lilliefors Test Statistic	0.29
Lilliefors Critical Value	0.0819	Lilliefors Critical Value	0.0819
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	42.33	90% H-UCL	36.72
		90% Chebyshev (MVUE) UCL	39.4
90% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	41.68
90% Adjusted-CLT UCL	43.61	97.5% Chebyshev (MVUE) UCL	44.85
90% Modified-t UCL	42.64	99% Chebyshev (MVUE) UCL	51.09
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.523	Data do not follow a Discernable Distribution (0.05)	
Theta Star	14.77		
nu star	590.3		
Approximate Chi Square Value (.05)	546.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0977	90% CLT UCL	42.31
Adjusted Chi Square Value	546.3	90% Jackknife UCL	42.33
		90% Standard Bootstrap UCL	42.19
Anderson-Darling Test Statistic	20.39	90% Bootstrap-t UCL	44.7
Anderson-Darling 5% Critical Value	0.762	90% Hall's Bootstrap UCL	43.56
Kolmogorov-Smirnov Test Statistic	0.337	90% Percentile Bootstrap UCL	42.21
Kolmogorov-Smirnov 5% Critical Value	0.0859	90% BCA Bootstrap UCL	44.31
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL	49.08
		95% Chebyshev(Mean, Sd) UCL	54.43
		97.5% Chebyshev(Mean, Sd) UCL	61.86
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	76.46
90% Approximate Gamma UCL	40.23		

Arsenic - Soil, 0-3 Ft (mg/kg)

General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	29
Raw Statistics		Log-transformed Statistics	
Minimum	0.55	Minimum of Log Data	-0.598
Maximum	5.7	Maximum of Log Data	1.74
Mean	2.679	Mean of log Data	0.904
Median	2.7	SD of log Data	0.45
SD	0.964		
Coefficient of Variation	0.36		
Skewness	0.24		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Test Statistic	0.868
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	2.866	90% H-UCL	3.009
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	3.297
90% Adjusted-CLT UCL	2.867	95% Chebyshev (MVUE) UCL	3.555
90% Modified-t UCL	2.867	97.5% Chebyshev (MVUE) UCL	3.914
		99% Chebyshev (MVUE) UCL	4.619
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.919	Data appear Normal at 5% Significance Level	
Theta Star	0.453		
nu star	532.7		
Approximate Chi Square Value (.05)	491.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0941	90% CLT UCL	2.863
Adjusted Chi Square Value	490.3	90% Jackknife UCL	2.866
Anderson-Darling Test Statistic	0.9	90% Standard Bootstrap UCL	2.863
Anderson-Darling 5% Critical Value	0.752	90% Bootstrap-t UCL	2.855
Kolmogorov-Smirnov Test Statistic	0.15	90% Hall's Bootstrap UCL	2.874
Kolmogorov-Smirnov 5% Critical Value	0.132	90% Percentile Bootstrap UCL	2.864
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	2.86
		90% Chebyshev(Mean, Sd) UCL	3.11
Assuming Gamma Distribution		95% Chebyshev(Mean, Sd) UCL	3.305
90% Approximate Gamma UCL	2.904	97.5% Chebyshev(Mean, Sd) UCL	3.576
90% Adjusted Gamma UCL	2.911	99% Chebyshev(Mean, Sd) UCL	4.109
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Chromium - Soil, 0-3 Ft (mg/kg)

Raw Statistics		Log-transformed Statistics	
Minimum	2	Minimum of Log Data	0.693
Maximum	265	Maximum of Log Data	5.58
Mean	18.74	Mean of log Data	2.007
Median	6.1	SD of log Data	1.076
SD	47.46		
Coefficient of Variation	2.533		
Skewness	4.541		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.353	Shapiro Wilk Test Statistic	0.861
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	27.94	90% H-UCL	17.85
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	20.51
90% Adjusted-CLT UCL	31.23	95% Chebyshev (MVUE) UCL	23.9
90% Modified-t UCL	28.74	97.5% Chebyshev (MVUE) UCL	28.61
		99% Chebyshev (MVUE) UCL	37.85
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.631	Data do not follow a Discernable Distribution (0.05)	
Theta Star	29.7		
nu star	56.78		
Approximate Chi Square Value (.05)	43.62	Nonparametric Statistics	
Adjusted Level of Significance	0.0941	90% CLT UCL	27.81
Adjusted Chi Square Value	43.31	90% Jackknife UCL	27.94
Anderson-Darling Test Statistic	4.892	90% Standard Bootstrap UCL	27.63
Anderson-Darling 5% Critical Value	0.798	90% Bootstrap-t UCL	68.29
Kolmogorov-Smirnov Test Statistic	0.26	90% Hall's Bootstrap UCL	85.3
Kolmogorov-Smirnov 5% Critical Value	0.138	90% Percentile Bootstrap UCL	27.92
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	31.49
		90% Chebyshev(Mean, Sd) UCL	39.96
		95% Chebyshev(Mean, Sd) UCL	49.58
		97.5% Chebyshev(Mean, Sd) UCL	62.92
		99% Chebyshev(Mean, Sd) UCL	89.14
Assuming Gamma Distribution		Potential UCL to Use	
90% Approximate Gamma UCL	24.39	Potential UCL to Use	Recommendation Provided only for 95% Confidence Coefficient
90% Adjusted Gamma UCL	24.56		
Nickel - Soil, 0-3 Ft (mg/kg)			
General Statistics			
Number of Valid Observations	36	Number of Distinct Observations	30
Raw Statistics		Log-transformed Statistics	
Minimum	15.6	Minimum of Log Data	2.747

	SD	135.8
Coefficient of Variation		1.334
Skewness		3.274

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.424	Shapiro Wilk Test Statistic	0.634
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	131.4	90% H-UCL	106.1
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	120.1
90% Adjusted-CLT UCL	139.7	95% Chebyshev (MVUE) UCL	134.2
90% Modified-t UCL	133.4	97.5% Chebyshev (MVUE) UCL	153.7
		99% Chebyshev (MVUE) UCL	192.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.512	Data do not follow a Discernable Distribution (0.05)	
Theta Star	67.34	Nonparametric Statistics	
nu star	108.9	90% CLT UCL	130.8
Approximate Chi Square Value (.05)	90.44	90% Jackknife UCL	131.4
Adjusted Level of Significance	0.092	90% Standard Bootstrap UCL	130.5
Adjusted Chi Square Value	89.83	90% Bootstrap-t UCL	149.2
Anderson-Darling Test Statistic	6.666	90% Hall's Bootstrap UCL	129
Anderson-Darling 5% Critical Value	0.765	90% Percentile Bootstrap UCL	132.1
Kolmogorov-Smirnov Test Statistic	0.322	90% BCA Bootstrap UCL	137.9
Kolmogorov-Smirnov 5% Critical Value	0.149	90% Chebyshev(Mean, Sd) UCL	169.7
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	200.5
		97.5% Chebyshev(Mean, Sd) UCL	243.2
		99% Chebyshev(Mean, Sd) UCL	327.1
Assuming Gamma Distribution		Potential UCL to Use	
90% Approximate Gamma UCL	122.6	Recommendation Provided only for 95% Confidence Coefficient	
90% Adjusted Gamma UCL	123.4		

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Aroclor 1260 - Soil, 0-3 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	112	Number of Distinct Observations	38
Raw Statistics		Log-transformed Statistics	
Minimum	0.05	Minimum of Log Data	-2.996
Maximum	1600	Maximum of Log Data	7.378
Mean	47.8	Mean of log Data	2.317
Median	5	SD of log Data	1.646
SD	174.4		
Coefficient of Variation	3.648		
Skewness	7.309		

Lilliefors Test Statistic	0.374	Lilliefors Test Statistic	0.296
Lilliefors Critical Value	0.0837	Lilliefors Critical Value	0.0837
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	81.13	90% H-UCL	88.88
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	102.4
90% Adjusted-CLT UCL	89	95% Chebyshev (MVUE) UCL	122.6
90% Modified-t UCL	83	97.5% Chebyshev (MVUE) UCL	150.5
		99% Chebyshev (MVUE) UCL	205.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.408	Data do not follow a Discernable Distribution (0.05)	
Theta Star	144.2		
nu star	91.47		
Approximate Chi Square Value (.05)	74.62	Nonparametric Statistics	
Adjusted Level of Significance	0.0976	90% CLT UCL	81
Adjusted Chi Square Value	74.46	90% Jackknife UCL	81.13
Anderson-Darling Test Statistic	11.35	90% Standard Bootstrap UCL	80.9
Anderson-Darling 5% Critical Value	0.84	90% Bootstrap-t UCL	105.7
Kolmogorov-Smirnov Test Statistic	0.328	90% Hall's Bootstrap UCL	173
Kolmogorov-Smirnov 5% Critical Value	0.0924	90% Percentile Bootstrap UCL	82.78
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	91.47
		90% Chebyshev(Mean, Sd) UCL	110.7
		95% Chebyshev(Mean, Sd) UCL	134.1
		97.5% Chebyshev(Mean, Sd) UCL	166.7
		99% Chebyshev(Mean, Sd) UCL	230.6
Assuming Gamma Distribution			
90% Approximate Gamma UCL	72.18		
90% Adjusted Gamma UCL	72.33		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Benz(a)anthracene - Soil, 0-3 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	26
Raw Statistics		Log-transformed Statistics	
Minimum	2.7	Minimum of Log Data	0.993
Maximum	220	Maximum of Log Data	5.394
Mean	20.83	Mean of log Data	2.195
Median	6.1	SD of log Data	1.115
SD	42.17		
Coefficient of Variation	2.025		
Skewness	3.97		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.462	Shapiro Wilk Test Statistic	0.87
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

		90% Chebyshev (MVUE) UCL	34.28
90% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	41.09
90% Adjusted-CLT UCL	44.82	97.5% Chebyshev (MVUE) UCL	50.54
90% Modified-t UCL	40.32	99% Chebyshev (MVUE) UCL	69.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.598	Data do not follow a Discernable Distribution (0.05)	
Theta Star	42.17		
nu star	37.06		
Approximate Chi Square Value (.05)	26.55	Nonparametric Statistics	
Adjusted Level of Significance	0.0903	90% CLT UCL	38.56
Adjusted Chi Square Value	26.16	90% Jackknife UCL	38.86
Anderson-Darling Test Statistic	2.53	90% Standard Bootstrap UCL	38.82
Anderson-Darling 5% Critical Value	0.798	90% Bootstrap-t UCL	66.38
Kolmogorov-Smirnov Test Statistic	0.228	90% Hall's Bootstrap UCL	96.48
Kolmogorov-Smirnov 5% Critical Value	0.165	90% Percentile Bootstrap UCL	39.1
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	45.95
		90% Chebyshev(Mean, Sd) UCL	56.46
		95% Chebyshev(Mean, Sd) UCL	70.62
		97.5% Chebyshev(Mean, Sd) UCL	90.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	128.9
90% Approximate Gamma UCL	35.2		
90% Adjusted Gamma UCL	35.72		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Benzo(k)fluoranthene - Soil, 0-3 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	28
Raw Statistics		Log-transformed Statistics	
Minimum	2.5	Minimum of Log Data	0.916
Maximum	280	Maximum of Log Data	5.635
Mean	21.37	Mean of log Data	2.136
Median	5.4	SD of log Data	1.158
SD	50.44		
Coefficient of Variation	2.361		
Skewness	4.813		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.387	Shapiro Wilk Test Statistic	0.874
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	33.24	90% H-UCL	25.02
		90% Chebyshev (MVUE) UCL	27.88
90% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	33.26
90% Adjusted-CLT UCL	38.57	97.5% Chebyshev (MVUE) UCL	40.73

	k star (bias corrected)	0.663	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	35.44			
	nu star	41.1			
Approximate Chi Square Value (.05)	29.99	Nonparametric Statistics			
Adjusted Level of Significance	0.0903	90% CLT UCL			34.86
Adjusted Chi Square Value	29.57	90% Jackknife UCL			35.12
		90% Standard Bootstrap UCL			34.53
Anderson-Darling Test Statistic	2.491	90% Bootstrap-t UCL			56.28
Anderson-Darling 5% Critical Value	0.791	90% Hall's Bootstrap UCL			84.53
Kolmogorov-Smirnov Test Statistic	0.244	90% Percentile Bootstrap UCL			34.75
Kolmogorov-Smirnov 5% Critical Value	0.164	90% BCA Bootstrap UCL			42.46
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL			50.1
		95% Chebyshev(Mean, Sd) UCL			62.15
		97.5% Chebyshev(Mean, Sd) UCL			78.88
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL			111.7
90% Approximate Gamma UCL	32.19				
90% Adjusted Gamma UCL	32.65				

Indeno(1,2,3-cd)pyrene - Soil, 0-3 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	28
Raw Statistics		Log-transformed Statistics	
Minimum	2.65	Minimum of Log Data	0.975
Maximum	250	Maximum of Log Data	5.521
Mean	21.86	Mean of log Data	2.326
Median	7.9	SD of log Data	1.091
SD	44.66		
Coefficient of Variation	2.043		
Skewness	4.737		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.421	Shapiro Wilk Test Statistic	0.914
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			
90% Student's-t UCL	32.37	Assuming Lognormal Distribution	
		90% H-UCL	27.03
		90% Chebyshev (MVUE) UCL	30.44
90% UCLs (Adjusted for Skewness)			
90% Adjusted-CLT UCL	37.02	95% Chebyshev (MVUE) UCL	36.07
90% Modified-t UCL	33.51	97.5% Chebyshev (MVUE) UCL	43.88
		99% Chebyshev (MVUE) UCL	59.22
Gamma Distribution Test			
k star (bias corrected)	0.73	Data Distribution	
Theta Star	29.96	Data do not follow a Discernable Distribution (0.05)	
nu star	45.24		

Anderson-Darling Test Statistic	4.45	90% Standard Bootstrap UCL	10.49
Anderson-Darling 5% Critical Value	0.771	90% Bootstrap-t UCL	22.46
Kolmogorov-Smirnov Test Statistic	0.262	90% Hall's Bootstrap UCL	29.45
Kolmogorov-Smirnov 5% Critical Value	0.162	90% Percentile Bootstrap UCL	10.73
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	11.94
Assuming Gamma Distribution		90% Chebyshev(Mean, Sd) UCL	14.4
		95% Chebyshev(Mean, Sd) UCL	17.47
		97.5% Chebyshev(Mean, Sd) UCL	21.72
		99% Chebyshev(Mean, Sd) UCL	30.09
90% Approximate Gamma UCL	9.686		
90% Adjusted Gamma UCL	9.79		

Benzo(g,h,i)perylene - Soil, 0-3 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	
Raw Statistics		Log-transformed Statistics	
Minimum	2.7	Minimum of Log Data	0.993
Maximum	230	Maximum of Log Data	5.438
Mean	22.73	Mean of log Data	2.473
Median	9.7	SD of log Data	1.04
SD	41.28		
Coefficient of Variation	1.816		
Skewness	4.532		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.456	Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	32.45	90% H-UCL	28.92
		90% Chebyshev (MVUE) UCL	32.76
90% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	
90% Adjusted-CLT UCL	36.54	97.5% Chebyshev (MVUE) UCL	46.72
90% Modified-t UCL	33.45	99% Chebyshev (MVUE) UCL	62.66
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.834	Data appear Lognormal at 5% Significance Level	
Theta Star	27.26		
nu star	51.69		
Approximate Chi Square Value (.05)	39.16	Nonparametric Statistics	
Adjusted Level of Significance	0.0903	90% CLT UCL	32.23
Adjusted Chi Square Value	38.68	90% Jackknife UCL	32.45
Anderson-Darling Test Statistic	1.381	90% Standard Bootstrap UCL	32.01
Anderson-Darling 5% Critical Value	0.78	90% Bootstrap-t UCL	48.96
		90% Hall's Bootstrap UCL	80.1

		95% Chebyshev(Mean, Sd) UCL	543.1
		97.5% Chebyshev(Mean, Sd) UCL	720.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1070
90% Approximate Gamma UCL	155.7		
90% Adjusted Gamma UCL	155.9		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Antimony - Soil, 0-30 Ft (mg/kg)

General Statistics			
Number of Valid Observations	71	Number of Distinct Observations	27
Raw Statistics		Log-transformed Statistics	
Minimum	0.08	Minimum of Log Data	-2.526
Maximum	21.1	Maximum of Log Data	3.049
Mean	5.759	Mean of log Data	1.598
Median	5.65	SD of log Data	0.808
SD	2.575		
Coefficient of Variation	0.447		
Skewness	3.904		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.399	Lilliefors Test Statistic	0.473
Lilliefors Critical Value	0.105	Lilliefors Critical Value	0.105
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	6.154	90% H-UCL	7.986
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	9.027
90% Adjusted-CLT UCL	6.252	95% Chebyshev (MVUE) UCL	10.03
90% Modified-t UCL	6.178	97.5% Chebyshev (MVUE) UCL	11.42
		99% Chebyshev (MVUE) UCL	14.16
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.297	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.747		
nu star	468.1		
Approximate Chi Square Value (.05)	429.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0963	90% CLT UCL	6.151
Adjusted Chi Square Value	428.7	90% Jackknife UCL	6.154
Anderson-Darling Test Statistic	18.35	90% Standard Bootstrap UCL	6.154
Anderson-Darling 5% Critical Value	0.757	90% Bootstrap-t UCL	6.576
Kolmogorov-Smirnov Test Statistic	0.443	90% Hall's Bootstrap UCL	9.73
Kolmogorov-Smirnov 5% Critical Value	0.106	90% Percentile Bootstrap UCL	6.149
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	6.286
Assuming Gamma Distribution		90% Chebyshev(Mean, Sd) UCL	6.676
		95% Chebyshev(Mean, Sd) UCL	7.091
		97.5% Chebyshev(Mean, Sd) UCL	7.668
		99% Chebyshev(Mean, Sd) UCL	8.8

Chromium - Soil, 0-30 Ft (mg/kg)

General Statistics	
Number of Valid Observations	89
	Number of Distinct Observations
	75
Raw Statistics	
Minimum	7.51
Maximum	311
Mean	25.66
Median	19.7
SD	32.03
Coefficient of Variation	1.248
Skewness	8.22
Log-transformed Statistics	
Minimum of Log Data	2.016
Maximum of Log Data	5.74
Mean of log Data	3.057
SD of log Data	0.501
Relevant UCL Statistics	
Normal Distribution Test	
Lilliefors Test Statistic	0.299
Lilliefors Critical Value	0.0939
Data not Normal at 5% Significance Level	
Lognormal Distribution Test	
Lilliefors Test Statistic	0.0822
Lilliefors Critical Value	0.0939
Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution	
90% Student's-t UCL	30.05
90% UCLs (Adjusted for Skewness)	
90% Adjusted-CLT UCL	32.13
90% Modified-t UCL	30.54
Assuming Lognormal Distribution	
90% H-UCL	25.98
90% Chebyshev (MVUE) UCL	28.09
95% Chebyshev (MVUE) UCL	29.92
97.5% Chebyshev (MVUE) UCL	32.46
99% Chebyshev (MVUE) UCL	37.45
Gamma Distribution Test	
k star (bias corrected)	2.72
Theta Star	9.433
nu star	484.2
Approximate Chi Square Value (.05)	444.8
Adjusted Level of Significance	0.097
Adjusted Chi Square Value	444.3
Data Distribution	
Data appear Lognormal at 5% Significance Level	
Nonparametric Statistics	
90% CLT UCL	30.01
90% Jackknife UCL	30.05
90% Standard Bootstrap UCL	29.92
90% Bootstrap-t UCL	39.14
90% Hall's Bootstrap UCL	52.41
90% Percentile Bootstrap UCL	30.03
90% BCA Bootstrap UCL	33.26
90% Chebyshev(Mean, Sd) UCL	35.85
95% Chebyshev(Mean, Sd) UCL	40.46
97.5% Chebyshev(Mean, Sd) UCL	46.87
99% Chebyshev(Mean, Sd) UCL	59.45
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
90% Approximate Gamma UCL	27.94
90% Adjusted Gamma UCL	27.97

Number of Valid Observations	71	Number of Distinct Observations	58
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Raw Statistics

Minimum	15.6
Maximum	91.4
Mean	24.26
Median	22.4
SD	9.224
Coefficient of Variation	0.38
Skewness	5.643

Log-transformed Statistics

Minimum of Log Data	2.747
Maximum of Log Data	4.515
Mean of log Data	3.15
SD of log Data	0.25

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.201
Lilliefors Critical Value	0.105

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.0916
Lilliefors Critical Value	0.105

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

90% Student's-t UCL	25.68
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90% UCLs (Adjusted for Skewness)

90% Adjusted-CLT UCL	26.19
90% Modified-t UCL	25.8

Assuming Lognormal Distribution

90% H-UCL	25.06
90% Chebyshev (MVUE) UCL	26.24
95% Chebyshev (MVUE) UCL	27.23
97.5% Chebyshev (MVUE) UCL	28.59
99% Chebyshev (MVUE) UCL	31.27

Gamma Distribution Test

k star (bias corrected)	12.56
Theta Star	1.933
nu star	1783

Data Distribution

Data appear Lognormal at 5% Significance Level

Approximate Chi Square Value (.05)

Adjusted Level of Significance	0.0963
Adjusted Chi Square Value	1705

Nonparametric Statistics

90% CLT UCL	25.67
90% Jackknife UCL	25.68
90% Standard Bootstrap UCL	25.64
90% Bootstrap-t UCL	26.94
90% Hall's Bootstrap UCL	33.47
90% Percentile Bootstrap UCL	25.82
90% BCA Bootstrap UCL	26.36
90% Chebyshev(Mean, Sd) UCL	27.55
95% Chebyshev(Mean, Sd) UCL	29.04
97.5% Chebyshev(Mean, Sd) UCL	31.1
99% Chebyshev(Mean, Sd) UCL	35.16

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

90% Approximate Gamma UCL	25.35
90% Adjusted Gamma UCL	25.36

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Zinc - Soil, 0-30 Ft (mg/kg)

General Statistics

Number of Valid Observations	71	Number of Distinct Observations	62
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Raw Statistics

Log-transformed Statistics

	Median	5	SD of log Data	1.81			
	SD	163					
	Coefficient of Variation	3.526					
	Skewness	7.354					
Relevant UCL Statistics							
Normal Distribution Test		Lognormal Distribution Test					
Lilliefors Test Statistic	0.388	Lilliefors Test Statistic	0.305				
Lilliefors Critical Value	0.0751	Lilliefors Critical Value	0.0751				
Data not Normal at 5% Significance Level							
Assuming Normal Distribution		Assuming Lognormal Distribution					
90% Student's-t UCL	64.03	90% H-UCL	66.27				
90% UCLs (Adjusted for Skewness)							
90% Adjusted-CLT UCL	70.11	90% Chebyshev (MVUE) UCL	77.12				
90% Modified-t UCL	65.47	95% Chebyshev (MVUE) UCL	91.6				
		97.5% Chebyshev (MVUE) UCL	111.7				
		99% Chebyshev (MVUE) UCL	151.1				
Gamma Distribution Test		Data Distribution					
k star (bias corrected)	0.399	Data do not follow a Discernable Distribution (0.05)					
Theta Star	115.8						
nu star	111						
Approximate Chi Square Value (.05)		Nonparametric Statistics					
Adjusted Level of Significance	0.0981	90% CLT UCL	63.95				
Adjusted Chi Square Value	92.2	90% Jackknife UCL	64.03				
		90% Standard Bootstrap UCL	64.26				
Anderson-Darling Test Statistic	15.48	90% Bootstrap-t UCL	81.83				
Anderson-Darling 5% Critical Value	0.843	90% Hall's Bootstrap UCL	98.87				
Kolmogorov-Smirnov Test Statistic	0.297	90% Percentile Bootstrap UCL	64.7				
Kolmogorov-Smirnov 5% Critical Value	0.085	90% BCA Bootstrap UCL	76.19				
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL	87.71				
		95% Chebyshev(Mean, Sd) UCL	106.5				
		97.5% Chebyshev(Mean, Sd) UCL	132.6				
		99% Chebyshev(Mean, Sd) UCL	183.8				
Assuming Gamma Distribution							
90% Approximate Gamma UCL	55.55						
90% Adjusted Gamma UCL	55.63						
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient					
Total PCBs - Soil, 0-30 Ft ($\mu\text{g/kg}$)							
General Statistics							
Number of Valid Observations	139	Number of Distinct Observations	45				
Raw Statistics		Log-transformed Statistics					
Minimum	0.05	Minimum of Log Data	-2.996				
Maximum	1650	Maximum of Log Data	7.409				
Mean	56.04	Mean of log Data	2.359				
Median	5	SD of log Data	1.938				
SD	170.8						
Coefficient of Variation	3.047						

Normal Distribution Test		Lognormal Distribution Test			
Lilliefors Test Statistic	0.397	Lilliefors Test Statistic	0.194		
Lilliefors Critical Value	0.124	Lilliefors Critical Value	0.124		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
90% Student's-t UCL	35.15	90% H-UCL	24.45		
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	28.03		
90% Adjusted-CLT UCL	38	95% Chebyshev (MVUE) UCL	33.01		
90% Modified-t UCL	35.85	97.5% Chebyshev (MVUE) UCL	39.91		
		99% Chebyshev (MVUE) UCL	53.48		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	0.543	Data do not follow a Discernable Distribution (0.05)			
Theta Star	45.61				
nu star	55.43				
Approximate Chi Square Value (.05)	42.44	Nonparametric Statistics			
Adjusted Level of Significance	0.0948	90% CLT UCL	35.01		
Adjusted Chi Square Value	42.18	90% Jackknife UCL	35.15		
Anderson-Darling Test Statistic	6.436	90% Standard Bootstrap UCL	34.89		
Anderson-Darling 5% Critical Value	0.809	90% Bootstrap-t UCL	41.55		
Kolmogorov-Smirnov Test Statistic	0.29	90% Hall's Bootstrap UCL	39.2		
Kolmogorov-Smirnov 5% Critical Value	0.131	90% Percentile Bootstrap UCL	35.7		
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	38.33		
		90% Chebyshev(Mean, Sd) UCL	48.73		
		95% Chebyshev(Mean, Sd) UCL	59.57		
		97.5% Chebyshev(Mean, Sd) UCL	74.62		
		99% Chebyshev(Mean, Sd) UCL	104.2		
Assuming Gamma Distribution					
90% Approximate Gamma UCL	32.37				
90% Adjusted Gamma UCL	32.58				
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient			
Benzo(b)fluoranthene - Soil, 0-30 Ft ($\mu\text{g/kg}$)					
General Statistics					
Number of Valid Observations	51	Number of Distinct Observations	35		
Raw Statistics		Log-transformed Statistics			
Minimum	2.65	Minimum of Log Data	0.975		
Maximum	320	Maximum of Log Data	5.768		
Mean	26.2	Mean of log Data	2.105		
Median	5.3	SD of log Data	1.288		
SD	60.62				
Coefficient of Variation	2.314				
Skewness	3.743				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Lilliefors Test Statistic	0.349	Lilliefors Test Statistic	0.206		
Lilliefors Critical Value	0.124	Lilliefors Critical Value	0.124		

	90% Student's-t UCL	31.73		90% H-UCL	23.41							
				90% Chebyshev (MVUE) UCL	26.8							
90% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	31.62							
	90% Adjusted-CLT UCL	34.31		97.5% Chebyshev (MVUE) UCL	38.32							
	90% Modified-t UCL	32.36		99% Chebyshev (MVUE) UCL	51.47							
Gamma Distribution Test		Data Distribution										
	k star (bias corrected)	0.55	Data do not follow a Discernable Distribution (0.05)									
	Theta Star	40.94										
	nu star	56.13										
Approximate Chi Square Value (.05)	43.05		Nonparametric Statistics									
	Adjusted Level of Significance	0.0948		90% CLT UCL	31.61							
	Adjusted Chi Square Value	42.78		90% Jackknife UCL	31.73							
	Anderson-Darling Test Statistic	6.101		90% Standard Bootstrap UCL	31.72							
	Anderson-Darling 5% Critical Value	0.808		90% Bootstrap-t UCL	38.53							
	Kolmogorov-Smirnov Test Statistic	0.271		90% Hall's Bootstrap UCL	35.03							
	Kolmogorov-Smirnov 5% Critical Value	0.131		90% Percentile Bootstrap UCL	31.73							
Data not Gamma Distributed at 5% Significance Level				90% BCA Bootstrap UCL	35.69							
				90% Chebyshev(Mean, Sd) UCL	43.78							
				95% Chebyshev(Mean, Sd) UCL	53.41							
				97.5% Chebyshev(Mean, Sd) UCL	66.77							
				99% Chebyshev(Mean, Sd) UCL	93.01							
Assuming Gamma Distribution												
	90% Approximate Gamma UCL	29.37										
	90% Adjusted Gamma UCL	29.56										
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient										
Benzo(a)pyrene - Soil, 0-30 Ft ($\mu\text{g/kg}$)												
General Statistics												
Number of Valid Observations	51		Number of Distinct Observations									
			36									
Raw Statistics		Log-transformed Statistics										
	Minimum	2.7		Minimum of Log Data	0.993							
	Maximum	270		Maximum of Log Data	5.598							
	Mean	25.03		Mean of log Data	2.169							
	Median	5.4		SD of log Data	1.254							
	SD	53.27										
	Coefficient of Variation	2.128										
	Skewness	3.544										
Relevant UCL Statistics												
Normal Distribution Test		Lognormal Distribution Test										
	Lilliefors Test Statistic	0.338		Lilliefors Test Statistic	0.187							
	Lilliefors Critical Value	0.124		Lilliefors Critical Value	0.124							
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level									
Assuming Normal Distribution		Assuming Lognormal Distribution										
	90% Student's-t UCL	34.72		90% H-UCL	27.11							
				90% Chebyshev (MVUE) UCL	31.04							
90% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	36.63							

Gamma Distribution Test		Data Distribution			
k star (bias corrected)	0.571	Data do not follow a Discernable Distribution (0.05)			
Theta Star	42.32				
nu star	58.28				
Approximate Chi Square Value (.05)	44.94	Nonparametric Statistics			
Adjusted Level of Significance	0.0948	90% CLT UCL	33.99		
Adjusted Chi Square Value	44.67	90% Jackknife UCL	34.12		
		90% Standard Bootstrap UCL	34.08		
Anderson-Darling Test Statistic	5.061	90% Bootstrap-t UCL	41.78		
Anderson-Darling 5% Critical Value	0.807	90% Hall's Bootstrap UCL	40.58		
Kolmogorov-Smirnov Test Statistic	0.262	90% Percentile Bootstrap UCL	34.81		
Kolmogorov-Smirnov 5% Critical Value	0.131	90% BCA Bootstrap UCL	36.45		
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL	47.14		
		95% Chebyshev(Mean, Sd) UCL	57.54		
		97.5% Chebyshev(Mean, Sd) UCL	71.97		
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	100.3		
90% Approximate Gamma UCL	31.36				
90% Adjusted Gamma UCL	31.55				
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient			
Dibenz(a,h)anthracene - Soil, 0-30 Ft ($\mu\text{g/kg}$)					
General Statistics					
Number of Valid Observations	51	Number of Distinct Observations			
		30			
Raw Statistics		Log-transformed Statistics			
	Minimum	2.4	Minimum of Log Data		
	Maximum	54	Maximum of Log Data		
	Mean	7.958	Mean of log Data		
	Median	3.4	SD of log Data		
	SD	12.5			
	Coefficient of Variation	1.571			
	Skewness	3.041			
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Lilliefors Test Statistic	0.357	Lilliefors Test Statistic	0.273		
Lilliefors Critical Value	0.124	Lilliefors Critical Value	0.124		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
90% Student's-t UCL	10.23	90% H-UCL	8.03		
		90% Chebyshev (MVUE) UCL	9.16		
90% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10.32		
90% Adjusted-CLT UCL	10.73	97.5% Chebyshev (MVUE) UCL	11.93		
90% Modified-t UCL	10.36	99% Chebyshev (MVUE) UCL	15.1		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	1.053	Data do not follow a Discernable Distribution (0.05)			
Theta Star	7.556				

General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Projects\Port of Portland\Upland Source Control Sites\Shipyard (Swan Is Upland Facility)\Reports and
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Benzo(g,h,i)perylene - Soil, 0-30 Ft ($\mu\text{g}/\text{kg}$)

General Statistics

Number of Valid Observations	51	Number of Distinct Observations	36
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Raw Statistics

Minimum	2.7
Maximum	300
Mean	24.47
Median	7.8
SD	53.58
Coefficient of Variation	2.19
Skewness	4.106

Log-transformed Statistics

Minimum of Log Data	0.993
Maximum of Log Data	5.704
Mean of log Data	2.238
SD of log Data	1.205

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.342
Lilliefors Critical Value	0.124

Lognormal Distribution Test

Lilliefors Test Statistic	0.175
Lilliefors Critical Value	0.124

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

90% Student's-t UCL	34.21
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Assuming Lognormal Distribution

90% H-UCL	26.84
90% Chebyshev (MVUE) UCL	30.82
95% Chebyshev (MVUE) UCL	36.2
97.5% Chebyshev (MVUE) UCL	43.67
99% Chebyshev (MVUE) UCL	58.35

Gamma Distribution Test

k star (bias corrected)	0.614
Theta Star	39.85
nu star	62.63

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Approximate Chi Square Value (.05)

Adjusted Level of Significance	0.0948
Adjusted Chi Square Value	48.5

Nonparametric Statistics

90% CLT UCL	34.08
90% Jackknife UCL	34.21
90% Standard Bootstrap UCL	34.09
90% Bootstrap-t UCL	42.07
90% Hall's Bootstrap UCL	47.46
90% Percentile Bootstrap UCL	34.76
90% BCA Bootstrap UCL	37.27

Anderson-Darling Test Statistic

Anderson-Darling Test Statistic	4.107
Anderson-Darling 5% Critical Value	0.803
Kolmogorov-Smirnov Test Statistic	0.2
Kolmogorov-Smirnov 5% Critical Value	0.13

90% Bootstrap-t UCL	42.07
90% Hall's Bootstrap UCL	47.46
90% Percentile Bootstrap UCL	34.76
90% BCA Bootstrap UCL	37.27

90% Chebyshev(Mean, Sd) UCL	46.97
95% Chebyshev(Mean, Sd) UCL	57.17
97.5% Chebyshev(Mean, Sd) UCL	71.32
99% Chebyshev(Mean, Sd) UCL	99.11

Assuming Gamma Distribution

90% Approximate Gamma UCL	31.41
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General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Projects\Port of Portland\Upland Source Control Sites\Shipyard (Swan Is Upland Facility)\Reports and
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Naphthalene - Soil, 0-30 Ft ($\mu\text{g/kg}$) 3

General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	22
Raw Statistics			
Minimum	1.2	Minimum of Log Data	0.182
Maximum	54	Maximum of Log Data	3.989
Mean	6.376	Mean of log Data	1.491
Median	3.4	SD of log Data	0.706
SD	9.382		
Coefficient of Variation	1.472		
Skewness	4.67		
Relevant UCL Statistics			
Normal Distribution Test			
Shapiro Wilk Test Statistic	0.425	Lognormal Distribution Test	
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Test Statistic	0.842
Data not Normal at 5% Significance Level		Shapiro Wilk Critical Value	0.929
		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			
90% Student's-t UCL	8.584	Assuming Lognormal Distribution	
		90% H-UCL	6.996
90% UCLs (Adjusted for Skewness)			
90% Adjusted-CLT UCL	9.545	90% Chebyshev (MVUE) UCL	7.974
90% Modified-t UCL	8.82	95% Chebyshev (MVUE) UCL	9.029
		97.5% Chebyshev (MVUE) UCL	10.49
		99% Chebyshev (MVUE) UCL	13.37
Gamma Distribution Test			
k star (bias corrected)	1.402	Data Distribution	
Theta Star	4.548	Data do not follow a Discernable Distribution (0.05)	
nu star	86.92		
Approximate Chi Square Value (.05)	70.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0903	90% CLT UCL	8.535
Adjusted Chi Square Value	69.86	90% Jackknife UCL	8.584
		90% Standard Bootstrap UCL	8.441
Anderson-Darling Test Statistic	3.047	90% Bootstrap-t UCL	12.9
Anderson-Darling 5% Critical Value	0.763	90% Hall's Bootstrap UCL	18.2
Kolmogorov-Smirnov Test Statistic	0.268	90% Percentile Bootstrap UCL	8.558
Kolmogorov-Smirnov 5% Critical Value	0.161	90% BCA Bootstrap UCL	10.1
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL	11.43
		95% Chebyshev(Mean, Sd) UCL	13.72
		97.5% Chebyshev(Mean, Sd) UCL	16.9
		99% Chebyshev(Mean, Sd) UCL	23.14
Assuming Gamma Distribution			
90% Approximate Gamma UCL	7.86		

General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Projects\Port of Portland\Upland Source Control Sites\Shipyard (Swan Is Upland Facility)\Reports and
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Antimony - Soil, 0-15 Ft (mg/kg)

General Statistics					
Number of Valid Observations		45	Number of Distinct Observations		19
Raw Statistics					Log-transformed Statistics
	Minimum	0.08		Minimum of Log Data	-2.526
	Maximum	6.25		Maximum of Log Data	1.833
	Mean	5.253		Mean of log Data	1.473
	Median	5.6		SD of log Data	0.964
	SD	1.397			
	Coefficient of Variation	0.266			
	Skewness	-3.451			
Relevant UCL Statistics					
Normal Distribution Test			Lognormal Distribution Test		
Shapiro Wilk Test Statistic	0.421		Shapiro Wilk Test Statistic	0.321	
Shapiro Wilk Critical Value	0.945		Shapiro Wilk Critical Value	0.945	
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level		
Assuming Normal Distribution			Assuming Lognormal Distribution		
90% Student's-t UCL	5.524		90% H-UCL	8.935	
90% UCLs (Adjusted for Skewness)			90% Chebyshev (MVUE) UCL	10.27	
90% Adjusted-CLT UCL	5.443		95% Chebyshev (MVUE) UCL	11.83	
90% Modified-t UCL	5.506		97.5% Chebyshev (MVUE) UCL	13.98	
			99% Chebyshev (MVUE) UCL	18.22	
Gamma Distribution Test			Data Distribution		
k star (bias corrected)	2.671		Data do not follow a Discernable Distribution (0.05)		
Theta Star	1.967				
nu star	240.4				
Approximate Chi Square Value (.05)	212.8		Nonparametric Statistics		
Adjusted Level of Significance	0.0941		90% CLT UCL	5.52	
Adjusted Chi Square Value	212.1		90% Jackknife UCL	5.524	
			90% Standard Bootstrap UCL	5.52	
Anderson-Darling Test Statistic	13.91		90% Bootstrap-t UCL	5.458	
Anderson-Darling 5% Critical Value	0.756		90% Hall's Bootstrap UCL	5.463	
Kolmogorov-Smirnov Test Statistic	0.506		90% Percentile Bootstrap UCL	5.506	
Kolmogorov-Smirnov 5% Critical Value	0.133		90% BCA Bootstrap UCL	5.475	
Data not Gamma Distributed at 5% Significance Level			90% Chebyshev(Mean, Sd) UCL	5.878	
			95% Chebyshev(Mean, Sd) UCL	6.161	
			97.5% Chebyshev(Mean, Sd) UCL	6.553	
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	7.325	
90% Approximate Gamma UCL	5.936				

90% Adjusted Gamma UCL 5.955

Potential UCL to Use Recommendation Provided only for 95% Confidence Coefficient

Arsenic - Soil, 0-15 Ft (mg/kg)

General Statistics

Number of Valid Observations 55 Number of Distinct Observations 31

Raw Statistics**Log-transformed Statistics**

Minimum	0.55	Minimum of Log Data	-0.598
Maximum	5.7	Maximum of Log Data	1.74
Mean	2.64	Mean of log Data	0.897
Median	2.7	SD of log Data	0.422
SD	0.922		
Coefficient of Variation	0.349		
Skewness	0.353		

Relevant UCL Statistics**Normal Distribution Test****Lognormal Distribution Test**

Lilliefors Test Statistic	0.0715	Lilliefors Test Statistic	0.12
Lilliefors Critical Value	0.119	Lilliefors Critical Value	0.119

Data appear Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution**Assuming Lognormal Distribution**

90% Student's-t UCL 2.801 90% H-UCL 2.906

90% Chebyshev (MVUE) UCL 3.151

90% UCLs (Adjusted for Skewness)

95% Chebyshev (MVUE) UCL 3.366

90% Adjusted-CLT UCL 2.803

97.5% Chebyshev (MVUE) UCL 3.664

90% Modified-t UCL 2.802

99% Chebyshev (MVUE) UCL 4.249

Gamma Distribution Test**Data Distribution**

K star (bias corrected) 6.611 Data appear Normal at 5% Significance Level

Theta Star 0.399

nu star 727.2

Approximate Chi Square Value (.05) 678.7

Nonparametric Statistics

Adjusted Level of Significance 0.0952

90% CLT UCL 2.799

Adjusted Chi Square Value 677.7

90% Jackknife UCL 2.801

Anderson-Darling Test Statistic 0.715

90% Standard Bootstrap UCL 2.795

Anderson-Darling 5% Critical Value 0.752

90% Bootstrap-t UCL 2.81

Kolmogorov-Smirnov Test Statistic 0.0898

90% Hall's Bootstrap UCL 2.813

Kolmogorov-Smirnov 5% Critical Value 0.12

90% Percentile Bootstrap UCL 2.797

Data appear Gamma Distributed at 5% Significance Level

90% BCA Bootstrap UCL 2.791

90% Chebyshev(Mean, Sd) UCL 3.013

Assuming Gamma Distribution

95% Chebyshev(Mean, Sd) UCL 3.182

90% Approximate Gamma UCL 2.828

97.5% Chebyshev(Mean, Sd) UCL 3.416

90% Adjusted Gamma UCL 2.832

99% Chebyshev(Mean, Sd) UCL 3.877

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Chromium - Soil, 0-15 Ft (mg/kg)

General Statistics			
Number of Valid Observations	55	Number of Distinct Observations	48
Raw Statistics		Log-transformed Statistics	
Minimum	8.1	Minimum of Log Data	2.092
Maximum	60.8	Maximum of Log Data	4.108
Mean	20.49	Mean of log Data	2.953
Median	17.4	SD of log Data	0.358
SD	8.465		
Coefficient of Variation	0.413		
Skewness	2.227		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.16	Lilliefors Test Statistic	0.115
Lilliefors Critical Value	0.119	Lilliefors Critical Value	0.119
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution			
90% Student's-t UCL	21.97	90% H-UCL	21.85
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	23.44
90% Adjusted-CLT UCL	22.2	95% Chebyshev (MVUE) UCL	24.82
90% Modified-t UCL	22.03	97.5% Chebyshev (MVUE) UCL	26.73
		99% Chebyshev (MVUE) UCL	30.48
Gamma Distribution Test			
k star (bias corrected)	7.217	Data Distribution	
Theta Star	2.839	Data appear Lognormal at 5% Significance Level	
nu star	793.9		
Approximate Chi Square Value (.05)	743.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0952	90% CLT UCL	21.95
Adjusted Chi Square Value	742.2	90% Jackknife UCL	21.97
Anderson-Darling Test Statistic	0.981	90% Standard Bootstrap UCL	21.95
Anderson-Darling 5% Critical Value	0.752	90% Bootstrap-t UCL	22.27
Kolmogorov-Smirnov Test Statistic	0.133	90% Hall's Bootstrap UCL	22.38
Kolmogorov-Smirnov 5% Critical Value	0.12	90% Percentile Bootstrap UCL	21.95
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	22.36
		90% Chebyshev(Mean, Sd) UCL	23.91
		95% Chebyshev(Mean, Sd) UCL	25.47
		97.5% Chebyshev(Mean, Sd) UCL	27.62
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	31.85
90% Approximate Gamma UCL	21.89		
90% Adjusted Gamma UCL	21.92		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

General Statistics					
Number of Valid Observations		55			
Raw Statistics		Log-transformed Statistics			
Minimum	2	Minimum of Log Data	0.693		
Maximum	265	Maximum of Log Data	5.58		
Mean	16.88	Mean of log Data	1.897		
Median	4.8	SD of log Data	1.075		
SD	43.59				
Coefficient of Variation	2.582				
Skewness	4.876				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Lilliefors Test Statistic	0.366	Lilliefors Test Statistic	0.144		
Lilliefors Critical Value	0.119	Lilliefors Critical Value	0.119		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
90% Student's-t UCL	24.51	90% H-UCL	22.34		
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	17.81		
90% Adjusted-CLT UCL	27.17	95% Chebyshev (MVUE) UCL	20.59		
90% Modified-t UCL	25.15	97.5% Chebyshev (MVUE) UCL	24.43		
		99% Chebyshev (MVUE) UCL	31.99		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	0.633	Data do not follow a Discernable Distribution (0.05)			
Theta Star	26.69				
nu star	69.59				
Approximate Chi Square Value (.05)	54.96	Nonparametric Statistics			
Adjusted Level of Significance	0.0952	90% CLT UCL	24.41		
Adjusted Chi Square Value	54.68	90% Jackknife UCL	24.51		
Anderson-Darling Test Statistic	6.106	90% Standard Bootstrap UCL	24.29		
Anderson-Darling 5% Critical Value	0.801	90% Bootstrap-t UCL	43.17		
Kolmogorov-Smirnov Test Statistic	0.262	90% Hall's Bootstrap UCL	66.46		
Kolmogorov-Smirnov 5% Critical Value	0.126	90% Percentile Bootstrap UCL	24.58		
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	27.52		
		90% Chebyshev(Mean, Sd) UCL	34.51		
		95% Chebyshev(Mean, Sd) UCL	42.5		
		97.5% Chebyshev(Mean, Sd) UCL	53.59		
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	75.36		
90% Approximate Gamma UCL	21.38				
90% Adjusted Gamma UCL	21.48				
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient			
Nickel - Soil, 0-15 Ft (mg/kg)					
General Statistics					
Number of Valid Observations		45			
Number of Distinct Observations		36			

Raw Statistics		Log-transformed Statistics		
	Minimum	15.6	Minimum of Log Data	2.747
	Maximum	31.4	Maximum of Log Data	3.447
	Mean	21.68	Mean of log Data	3.064
	Median	21	SD of log Data	0.154
	SD	3.466		
	Coefficient of Variation	0.16		
	Skewness	0.812		
Relevant UCL Statistics				
Normal Distribution Test		Lognormal Distribution Test		
	Shapiro Wilk Test Statistic	0.95	Shapiro Wilk Test Statistic	0.977
	Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data appear Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution		
	90% Student's-t UCL	22.35	90% H-UCL	22.35
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL		
	90% Adjusted-CLT UCL	22.39	95% Chebyshev (MVUE) UCL	23.18
	90% Modified-t UCL	22.36	97.5% Chebyshev (MVUE) UCL	23.86
			99% Chebyshev (MVUE) UCL	24.81
				26.67
Gamma Distribution Test		Data Distribution		
	k star (bias corrected)	39.38	Data appear Normal at 5% Significance Level	
	Theta Star	0.551		
	nu star	3544		
Approximate Chi Square Value (.05)		Nonparametric Statistics		
	Adjusted Level of Significance	0.0941	90% CLT UCL	22.34
	Adjusted Chi Square Value	3434	90% Jackknife UCL	22.35
			90% Standard Bootstrap UCL	22.32
	Anderson-Darling Test Statistic	0.414	90% Bootstrap-t UCL	22.39
	Anderson-Darling 5% Critical Value	0.748	90% Hall's Bootstrap UCL	22.39
	Kolmogorov-Smirnov Test Statistic	0.105	90% Percentile Bootstrap UCL	22.32
	Kolmogorov-Smirnov 5% Critical Value	0.131	90% BCA Bootstrap UCL	22.39
Data appear Gamma Distributed at 5% Significance Level			90% Chebyshev(Mean, Sd) UCL	23.23
			95% Chebyshev(Mean, Sd) UCL	23.93
			97.5% Chebyshev(Mean, Sd) UCL	24.91
			99% Chebyshev(Mean, Sd) UCL	26.82
Assuming Gamma Distribution		Potential UCL to Use		
	90% Approximate Gamma UCL	22.36	Potential UCL to Use	Recommendation Provided only for 95% Confidence Coefficient
	90% Adjusted Gamma UCL	22.38		
Zinc - Soil, 0-15 Ft (mg/kg)				
General Statistics				
Number of Valid Observations	45		Number of Distinct Observations	39
Raw Statistics		Log-transformed Statistics		
	Minimum	43.1	Minimum of Log Data	3.764

Maximum	645	Maximum of Log Data	6.469
Mean	91.77	Mean of log Data	4.217
Median	53.7	SD of log Data	0.596
SD	122.8		
Coefficient of Variation	1.339		
Skewness	3.721		

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.383
Shapiro Wilk Critical Value	0.945

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.594
Shapiro Wilk Critical Value	0.945

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

90% Student's-t UCL	115.6
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90% UCLs (Adjusted for Skewness)

90% Adjusted-CLT UCL	122.5
90% Modified-t UCL	117.3

Assuming Lognormal Distribution

90% H-UCL	92.6
90% Chebyshev (MVUE) UCL	103.6
95% Chebyshev (MVUE) UCL	114
97.5% Chebyshev (MVUE) UCL	128.4
99% Chebyshev (MVUE) UCL	156.8

Gamma Distribution Test

k star (bias corrected)	1.696
Theta Star	54.1
nu star	152.7

Approximate Chi Square Value (.05)

Adjusted Level of Significance	0.0941
Adjusted Chi Square Value	130.2

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Anderson-Darling Test Statistic	8.812
Anderson-Darling 5% Critical Value	0.763
Kolmogorov-Smirnov Test Statistic	0.317
Kolmogorov-Smirnov 5% Critical Value	0.134

Data not Gamma Distributed at 5% Significance Level

Nonparametric Statistics

90% CLT UCL	115.2
90% Jackknife UCL	115.6
90% Standard Bootstrap UCL	115
90% Bootstrap-t UCL	137.5
90% Hall's Bootstrap UCL	115.1
90% Percentile Bootstrap UCL	114.8
90% BCA Bootstrap UCL	126.2
90% Chebyshev(Mean, Sd) UCL	146.7
95% Chebyshev(Mean, Sd) UCL	171.6
97.5% Chebyshev(Mean, Sd) UCL	206.1
99% Chebyshev(Mean, Sd) UCL	274

Assuming Gamma Distribution

90% Approximate Gamma UCL	107.2
90% Adjusted Gamma UCL	107.6

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Aroclor 1260 - Soil, 0-15 Ft ($\mu\text{g/kg}$)

General Statistics

Number of Valid Observations	118	Number of Distinct Observations	39
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Raw Statistics

Minimum	0.05
Maximum	1600
Mean	49.45
Median	5

Log-transformed Statistics

Minimum of Log Data	-2.996
Maximum of Log Data	7.378
Mean of log Data	2.332
SD of log Data	1.648

	SD	173.8							
Coefficient of Variation		3.515							
Skewness		7.065							
Relevant UCL Statistics									
Normal Distribution Test			Lognormal Distribution Test						
Lilliefors Test Statistic		0.388	Lilliefors Test Statistic	0.288					
Lilliefors Critical Value		0.0816	Lilliefors Critical Value	0.0816					
Data not Normal at 5% Significance Level			Data not Lognormal at 5% Significance Level						
Assuming Normal Distribution			Assuming Lognormal Distribution						
90% Student's-t UCL		70.08	90% H-UCL	55.79					
90% UCLs (Adjusted for Skewness)			90% Chebyshev (MVUE) UCL	64.9					
90% Adjusted-CLT UCL		77.39	95% Chebyshev (MVUE) UCL	76.63					
90% Modified-t UCL		71.81	97.5% Chebyshev (MVUE) UCL	92.89					
99% Chebyshev (MVUE) UCL			99% Chebyshev (MVUE) UCL	124.8					
Gamma Distribution Test			Data Distribution						
k star (bias corrected)		0.412	Data do not follow a Discernable Distribution (0.05)						
Theta Star		120.1							
nu star		97.19							
Approximate Chi Square Value (.05)		79.8	Nonparametric Statistics						
Adjusted Level of Significance		0.0978	90% CLT UCL	69.96					
Adjusted Chi Square Value		79.65	90% Jackknife UCL	70.08					
Anderson-Darling Test Statistic		14.86	90% Standard Bootstrap UCL	70.43					
Anderson-Darling 5% Critical Value		0.839	90% Bootstrap-t UCL	92.48					
Kolmogorov-Smirnov Test Statistic		0.312	90% Hall's Bootstrap UCL	137.1					
Kolmogorov-Smirnov 5% Critical Value		0.0907	90% Percentile Bootstrap UCL	71.02					
Data not Gamma Distributed at 5% Significance Level			90% BCA Bootstrap UCL	79.33					
			90% Chebyshev(Mean, Sd) UCL	97.46					
			95% Chebyshev(Mean, Sd) UCL	119.2					
			97.5% Chebyshev(Mean, Sd) UCL	149.4					
			99% Chebyshev(Mean, Sd) UCL	208.7					
Assuming Gamma Distribution									
90% Approximate Gamma UCL		60.23							
90% Adjusted Gamma UCL		60.35							
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient							
Total PCBs - Soil, 0-15 Ft ($\mu\text{g/kg}$)									
General Statistics									
Number of Valid Observations		118	Number of Distinct Observations	43					
Raw Statistics			Log-transformed Statistics						
Minimum		0.05	Minimum of Log Data	-2.996					
Maximum		1650	Maximum of Log Data	7.409					
Mean		60.74	Mean of log Data	2.511					
Median		5	SD of log Data	1.794					
SD		182.1							
Coefficient of Variation		2.997							
Skewness		6.633							

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.369	Lilliefors Test Statistic	0.302
Lilliefors Critical Value	0.0816	Lilliefors Critical Value	0.0816
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	82.35	90% H-UCL	90.02
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	104.1
90% Adjusted-CLT UCL	89.53	95% Chebyshev (MVUE) UCL	124.3
90% Modified-t UCL	84.05	97.5% Chebyshev (MVUE) UCL	152.3
		99% Chebyshev (MVUE) UCL	207.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.406	Data do not follow a Discernable Distribution (0.05)	
Theta Star	149.7		
nu star	95.76		
Approximate Chi Square Value (.05)	78.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0978	90% CLT UCL	82.22
Adjusted Chi Square Value	78.35	90% Jackknife UCL	82.35
Anderson-Darling Test Statistic	12.25	90% Standard Bootstrap UCL	82.82
Anderson-Darling 5% Critical Value	0.841	90% Bootstrap-t UCL	103.2
Kolmogorov-Smirnov Test Statistic	0.332	90% Hall's Bootstrap UCL	156.8
Kolmogorov-Smirnov 5% Critical Value	0.0907	90% Percentile Bootstrap UCL	82.19
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	97.04
		90% Chebyshev(Mean, Sd) UCL	111
		95% Chebyshev(Mean, Sd) UCL	133.8
		97.5% Chebyshev(Mean, Sd) UCL	165.4
		99% Chebyshev(Mean, Sd) UCL	227.5
Assuming Gamma Distribution			
90% Approximate Gamma UCL	74.09		
90% Adjusted Gamma UCL	74.24		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Diesel Range Organics - Soil, 0-15 Ft (mg/kg)

General Statistics			
Raw Statistics		Log-transformed Statistics	
Number of Valid Observations	126	Number of Distinct Observations	39
Minimum	12.5	Minimum of Log Data	2.526
Maximum	15000	Maximum of Log Data	9.616
Mean	155.7	Mean of log Data	3.46
Median	27.5	SD of log Data	0.739
SD	1334		
Coefficient of Variation	8.567		
Skewness	11.21		

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Lilliefors Test Statistic	0.469	Lilliefors Test Statistic	0.322		
Lilliefors Critical Value	0.0789	Lilliefors Critical Value	0.0789		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
90% Student's-t UCL	308.7	90% H-UCL	46.22		
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	50.91		
90% Adjusted-CLT UCL	392.7	95% Chebyshev (MVUE) UCL	55.08		
90% Modified-t UCL	328.5	97.5% Chebyshev (MVUE) UCL	60.87		
		99% Chebyshev (MVUE) UCL	72.25		
Gamma Distribution Test		Data Distribution			
k star (bias corrected)	0.408	Data do not follow a Discernable Distribution (0.05)			
Theta Star	381.7				
nu star	102.8				
Approximate Chi Square Value (.05)	84.9	Nonparametric Statistics			
Adjusted Level of Significance	0.0979	90% CLT UCL	307.9		
Adjusted Chi Square Value	84.74	90% Jackknife UCL	308.7		
Anderson-Darling Test Statistic	7.937E+28	90% Standard Bootstrap UCL	309.1		
Anderson-Darling 5% Critical Value	0.841	90% Bootstrap-t UCL	4939		
Kolmogorov-Smirnov Test Statistic	0.472	90% Hall's Bootstrap UCL	3046		
Kolmogorov-Smirnov 5% Critical Value	0.0885	90% Percentile Bootstrap UCL	278.8		
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	508.2		
Assuming Gamma Distribution		90% Chebyshev(Mean, Sd) UCL	512.1		
90% Approximate Gamma UCL	188.5	95% Chebyshev(Mean, Sd) UCL	673.6		
90% Adjusted Gamma UCL	188.8	97.5% Chebyshev(Mean, Sd) UCL	897.7		
Potential UCL to Use		99% Chebyshev(Mean, Sd) UCL	1338		
		Recommendation Provided only for 95% Confidence Coefficient			
Naphthalene - Soil, 0-15 Ft ($\mu\text{g/kg}$)					
General Statistics					
Number of Valid Observations	39	Number of Distinct Observations	24		
Raw Statistics		Log-transformed Statistics			
Minimum	1.2	Minimum of Log Data	0.182		
Maximum	99	Maximum of Log Data	4.595		
Mean	8.668	Mean of log Data	1.54		
Median	3.3	SD of log Data	0.872		
SD	17.35				
Coefficient of Variation	2.002				
Skewness	4.406				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Shapiro Wilk Test Statistic	0.397	Shapiro Wilk Test Statistic	0.768		
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			

Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	12.29	90% H-UCL	8.658
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	9.929
90% Adjusted-CLT UCL		95% Chebyshev (MVUE) UCL	11.37
90% Modified-t UCL	12.62	97.5% Chebyshev (MVUE) UCL	13.38
99% Chebyshev (MVUE) UCL		99% Chebyshev (MVUE) UCL	17.32
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.884	Data do not follow a Discernable Distribution (0.05)	
Theta Star	9.808	Nonparametric Statistics	
nu star	68.93	90% CLT UCL	12.23
Approximate Chi Square Value (.05)	54.38	90% Jackknife UCL	12.29
Adjusted Level of Significance	0.0931	90% Standard Bootstrap UCL	12.04
Adjusted Chi Square Value	53.97	90% Bootstrap-t UCL	19.31
Anderson-Darling Test Statistic	5.636	90% Hall's Bootstrap UCL	28.34
Anderson-Darling 5% Critical Value	0.781	90% Percentile Bootstrap UCL	12.23
Kolmogorov-Smirnov Test Statistic	0.318	90% BCA Bootstrap UCL	14.24
Kolmogorov-Smirnov 5% Critical Value	0.146	90% Chebyshev(Mean, Sd) UCL	17
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.78
		97.5% Chebyshev(Mean, Sd) UCL	26.02
		99% Chebyshev(Mean, Sd) UCL	36.31
Assuming Gamma Distribution		Potential UCL to Use	
90% Approximate Gamma UCL	10.99	Recommendation Provided only for 95% Confidence Coefficient	
90% Adjusted Gamma UCL	11.07		

Benz(a)anthracene - Soil, 0-15 Ft ($\mu\text{g}/\text{kg}$)

General Statistics			
Number of Valid Observations	39	Number of Distinct Observations	29
Raw Statistics		Log-transformed Statistics	
Minimum	2.7	Minimum of Log Data	0.993
Maximum	220	Maximum of Log Data	5.394
Mean	21.19	Mean of log Data	2.066
Median	5.4	SD of log Data	1.193
SD	44.41		
Coefficient of Variation	2.096		
Skewness	3.461		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.47	Shapiro Wilk Test Statistic	0.822
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	30.46	90% H-UCL	23.4

Gamma Distribution Test		Data Distribution			
k star (bias corrected)	0.592	Data do not follow a Discernable Distribution (0.05)			
Theta Star	35.79				
nu star	46.17				
Approximate Chi Square Value (.05)		Nonparametric Statistics			
Adjusted Level of Significance	0.0931	90% CLT UCL	30.3		
Adjusted Chi Square Value	34.04	90% Jackknife UCL	30.46		
Anderson-Darling Test Statistic	4.432	90% Standard Bootstrap UCL	30.3		
Anderson-Darling 5% Critical Value	0.801	90% Bootstrap-t UCL	37.53		
Kolmogorov-Smirnov Test Statistic	0.266	90% Hall's Bootstrap UCL	35.53		
Kolmogorov-Smirnov 5% Critical Value	0.148	90% Percentile Bootstrap UCL	30.49		
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	33.35		
		90% Chebyshev(Mean, Sd) UCL	42.52		
		95% Chebyshev(Mean, Sd) UCL	52.18		
		97.5% Chebyshev(Mean, Sd) UCL	65.6		
		99% Chebyshev(Mean, Sd) UCL	91.94		
Assuming Gamma Distribution					
90% Approximate Gamma UCL	28.47				
90% Adjusted Gamma UCL	28.73				
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient			
(b)fluoranthene - Soil, 0-15 Ft ($\mu\text{g/kg}$)					
General Statistics					
Number of Valid Observations	39	Number of Distinct Observations	29		
Raw Statistics		Log-transformed Statistics			
Minimum	2.65	Minimum of Log Data	0.975		
Maximum	320	Maximum of Log Data	5.768		
Mean	25.23	Mean of log Data	2.136		
Median	5.4	SD of log Data	1.271		
SD	58.1				
Coefficient of Variation	2.303				
Skewness	4.144				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Shapiro Wilk Test Statistic	0.437	Shapiro Wilk Test Statistic	0.837		
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
90% Student's-t UCL	37.36	90% H-UCL	28.72		
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	32.17		
90% Adjusted-CLT UCL	41.56	95% Chebyshev (MVUE) UCL	38.44		
		97.5% Chebyshev (MVUE) UCL	47.14		

	90% Modified-t UCL	38.39	99% Chebyshev (MVUE) UCL	64.24
Gamma Distribution Test		Data Distribution		
k star (bias corrected)	0.543	Data do not follow a Discernable Distribution (0.05)		
Theta Star	46.42			
nu star	42.39			
Approximate Chi Square Value (.05)	31.1	Nonparametric Statistics		
Adjusted Level of Significance	0.0931	90% CLT UCL	37.15	
Adjusted Chi Square Value	30.8	90% Jackknife UCL	37.36	
Anderson-Darling Test Statistic	4.016	90% Standard Bootstrap UCL	37.18	
Anderson-Darling 5% Critical Value	0.806	90% Bootstrap-t UCL	53.86	
Kolmogorov-Smirnov Test Statistic	0.257	90% Hall's Bootstrap UCL	96.29	
Kolmogorov-Smirnov 5% Critical Value	0.149	90% Percentile Bootstrap UCL	37.88	
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	43.23	
		90% Chebyshev(Mean, Sd) UCL	53.14	
		95% Chebyshev(Mean, Sd) UCL	65.78	
		97.5% Chebyshev(Mean, Sd) UCL	83.33	
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	117.8	
90% Approximate Gamma UCL	34.38			
90% Adjusted Gamma UCL	34.72			
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient		

Benzo(k)fluoranthene - Soil, 0-15 Ft ($\mu\text{g/kg}$)

General Statistics							
Number of Valid Observations		39					
		Number of Distinct Observations					
		31					
Raw Statistics							
Minimum		2.5					
Maximum		280					
Mean		21.97					
Median		5.3					
SD		49.99					
Coefficient of Variation		2.276					
Skewness		4.273					
Relevant UCL Statistics							
Normal Distribution Test		Lognormal Distribution Test					
Shapiro Wilk Test Statistic		0.432					
Shapiro Wilk Critical Value		0.939					
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level					
Assuming Normal Distribution							
90% Student's-t UCL		32.41					
90% UCLs (Adjusted for Skewness)							
90% Adjusted-CLT UCL		36.14					
90% Modified-t UCL		33.32					
Assuming Lognormal Distribution							
90% H-UCL		24.92					
90% Chebyshev (MVUE) UCL		28.07					
95% Chebyshev (MVUE) UCL		33.41					
97.5% Chebyshev (MVUE) UCL		40.83					
99% Chebyshev (MVUE) UCL		55.39					
Gamma Distribution Test							
Data Distribution							

	k star (bias corrected)	0.574	Data do not follow a Discernable Distribution (0.05)		
	Theta Star	38.26			
	nu star	44.79			
Approximate Chi Square Value (.05)	33.17	Nonparametric Statistics			
Adjusted Level of Significance	0.0931	90% CLT UCL			32.23
Adjusted Chi Square Value	32.85	90% Jackknife UCL			32.41
Anderson-Darling Test Statistic	3.898	90% Standard Bootstrap UCL			31.99
Anderson-Darling 5% Critical Value	0.803	90% Bootstrap-t UCL			46.86
Kolmogorov-Smirnov Test Statistic	0.259	90% Hall's Bootstrap UCL			84.27
Kolmogorov-Smirnov 5% Critical Value	0.148	90% Percentile Bootstrap UCL			32.09
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL			37.62
Assuming Gamma Distribution		90% Chebyshev(Mean, Sd) UCL			45.98
90% Approximate Gamma UCL	29.66	95% Chebyshev(Mean, Sd) UCL			56.86
90% Adjusted Gamma UCL	29.95	97.5% Chebyshev(Mean, Sd) UCL			71.96
Potential UCL to Use		99% Chebyshev(Mean, Sd) UCL			101.6
		Recommendation Provided only for 95% Confidence Coefficient			

Benzo(a)pyrene - Soil, 0-15 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	39	Number of Distinct Observations	29
Raw Statistics		Log-transformed Statistics	
Minimum	2.7	Minimum of Log Data	0.993
Maximum	270	Maximum of Log Data	5.598
Mean	23.92	Mean of log Data	2.204
Median	5.8	SD of log Data	1.229
SD	49.84		
Coefficient of Variation	2.084		
Skewness	3.913		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.473	Shapiro Wilk Test Statistic	0.864
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			
90% Student's-t UCL	34.32	90% H-UCL	28.56
90% UCLs (Adjusted for Skewness)			
90% Adjusted-CLT UCL	37.71	90% Chebyshev (MVUE) UCL	32.17
90% Modified-t UCL	35.16	95% Chebyshev (MVUE) UCL	38.29
		97.5% Chebyshev (MVUE) UCL	46.79
		99% Chebyshev (MVUE) UCL	63.47
Gamma Distribution Test			
k star (bias corrected)	0.6	Data Distribution	
Theta Star	39.83	Data do not follow a Discernable Distribution (0.05)	
nu star	46.84		

Approximate Chi Square Value (.05)	34.94	Nonparametric Statistics	
Adjusted Level of Significance	0.0931	90% CLT UCL	34.14
Adjusted Chi Square Value	34.62	90% Jackknife UCL	34.32
		90% Standard Bootstrap UCL	33.62
Anderson-Darling Test Statistic	3.382	90% Bootstrap-t UCL	46.8
Anderson-Darling 5% Critical Value	0.8	90% Hall's Bootstrap UCL	85.27
Kolmogorov-Smirnov Test Statistic	0.25	90% Percentile Bootstrap UCL	34.34
Kolmogorov-Smirnov 5% Critical Value	0.148	90% BCA Bootstrap UCL	40.14
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL	47.86
		95% Chebyshev(Mean, Sd) UCL	58.7
		97.5% Chebyshev(Mean, Sd) UCL	73.75
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	103.3
90% Approximate Gamma UCL	32.06		
90% Adjusted Gamma UCL	32.36		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Indeno(1,2,3-cd)pyrene - Soil, 0-15 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	39	Number of Distinct Observations	31
Raw Statistics			
Minimum	2.65	Minimum of Log Data	0.975
Maximum	250	Maximum of Log Data	5.521
Mean	21.85	Mean of log Data	2.214
Median	7.6	SD of log Data	1.183
SD	44.06		
Coefficient of Variation	2.016		
Skewness	4.238		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.467	Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution			
90% Student's-t UCL	31.05	90% H-UCL	26.66
		90% Chebyshev (MVUE) UCL	30.21
90% UCLs (Adjusted for Skewness)			
90% Adjusted-CLT UCL	34.31	95% Chebyshev (MVUE) UCL	35.8
90% Modified-t UCL	31.85	97.5% Chebyshev (MVUE) UCL	43.55
		99% Chebyshev (MVUE) UCL	58.77
Gamma Distribution Test			
k star (bias corrected)	0.659	Data do not follow a Discernable Distribution (0.05)	
Theta Star	33.18		
nu star	51.37		
Approximate Chi Square Value (.05)	38.88	Nonparametric Statistics	
Adjusted Level of Significance	0.0931	90% CLT UCL	30.89
Adjusted Chi Square Value	38.54	90% Jackknife UCL	31.05

Anderson-Darling Test Statistic	2.77	90% Standard Bootstrap UCL	30.8		
Anderson-Darling 5% Critical Value	0.794	90% Bootstrap-t UCL	42.43		
Kolmogorov-Smirnov Test Statistic	0.252	90% Hall's Bootstrap UCL	81.26		
Kolmogorov-Smirnov 5% Critical Value	0.147	90% Percentile Bootstrap UCL	31.19		
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	35.16		
		90% Chebyshev(Mean, Sd) UCL	43.02		
		95% Chebyshev(Mean, Sd) UCL	52.6		
		97.5% Chebyshev(Mean, Sd) UCL	65.91		
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	92.05		
90% Approximate Gamma UCL	28.87				
90% Adjusted Gamma UCL	29.12				
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient			
z(a,h)anthracene - Soil, 0-15 Ft ($\mu\text{g/kg}$)					
General Statistics					
Number of Valid Observations	39	Number of Distinct Observations	24		
Raw Statistics		Log-transformed Statistics			
Minimum	2.4	Minimum of Log Data	0.875		
Maximum	54	Maximum of Log Data	3.989		
Mean	7.995	Mean of log Data	1.564		
Median	3.3	SD of log Data	0.835		
SD	12.4				
Coefficient of Variation	1.55				
Skewness	3.083				
Relevant UCL Statistics					
Normal Distribution Test		Lognormal Distribution Test			
Shapiro Wilk Test Statistic	0.476	Shapiro Wilk Test Statistic	0.721		
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939		
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution			
90% Student's-t UCL	10.58	90% H-UCL	8.468		
		90% Chebyshev (MVUE) UCL	9.698		
90% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11.06		
90% Adjusted-CLT UCL	11.24	97.5% Chebyshev (MVUE) UCL	12.95		
90% Modified-t UCL	10.75	99% Chebyshev (MVUE) UCL	16.66		
Gamma Distribution Test					
k star (bias corrected)	1.04	Data do not follow a Discernable Distribution (0.05)			
Theta Star	7.684				
nu star	81.16				
Approximate Chi Square Value (.05)	65.32	Nonparametric Statistics			
Adjusted Level of Significance	0.0931	90% CLT UCL	10.54		
Adjusted Chi Square Value	64.87	90% Jackknife UCL	10.58		
Anderson-Darling Test Statistic	5.688	90% Standard Bootstrap UCL	10.45		
Anderson-Darling 5% Critical Value	0.775	90% Bootstrap-t UCL	12.31		
		90% Hall's Bootstrap UCL	10.97		

Kolmogorov-Smirnov Test Statistic	0.269	90% Percentile Bootstrap UCL	10.67
Kolmogorov-Smirnov 5% Critical Value	0.145	90% BCA Bootstrap UCL	11.36
Data not Gamma Distributed at 5% Significance Level		90% Chebyshev(Mean, Sd) UCL	13.95
		95% Chebyshev(Mean, Sd) UCL	16.65
		97.5% Chebyshev(Mean, Sd) UCL	20.39
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27.74
90% Approximate Gamma UCL	9.934		
90% Adjusted Gamma UCL	10		
Potential UCL to Use		Recommendation Provided only for 95% Confidence Coefficient	

Benzo(g,h,i)perylene - Soil, 0-15 Ft ($\mu\text{g/kg}$)

General Statistics			
Number of Valid Observations	39	Number of Distinct Observations	30
Raw Statistics		Log-transformed Statistics	
Minimum	2.7	Minimum of Log Data	0.993
Maximum	230	Maximum of Log Data	5.438
Mean	21.81	Mean of log Data	2.301
Median	9.4	SD of log Data	1.143
SD	40.76		
Coefficient of Variation	1.869		
Skewness	4.094		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.491	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.939	Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level!	.	Data not Lognormal at 5% Significance Level	.
Assuming Normal Distribution			
90% Student's-t UCL	30.32	90% H-UCL	27.26
90% UCLs (Adjusted for Skewness)			
90% Adjusted-CLT UCL	33.23	90% Chebyshev (MVUE) UCL	31.02
90% Modified-t UCL	31.03	95% Chebyshev (MVUE) UCL	36.61
		97.5% Chebyshev (MVUE) UCL	44.36
		99% Chebyshev (MVUE) UCL	59.59
Gamma Distribution Test			
k star (bias corrected)	0.723	Data do not follow a Discernable Distribution (0.05)	.
Theta Star	30.17		
nu star	56.38		
Approximate Chi Square Value (.05)			
Adjusted Level of Significance	0.0931	Nonparametric Statistics	
Adjusted Chi Square Value	42.91	90% CLT UCL	30.17
Anderson-Darling Test Statistic	2.142	90% Jackknife UCL	30.32
Anderson-Darling 5% Critical Value	0.788	90% Standard Bootstrap UCL	30.02
Kolmogorov-Smirnov Test Statistic	0.195	90% Bootstrap-t UCL	40.01
Kolmogorov-Smirnov 5% Critical Value	0.147	90% Hall's Bootstrap UCL	71.94
Data not Gamma Distributed at 5% Significance Level	.	90% Percentile Bootstrap UCL	30.95
		90% BCA Bootstrap UCL	33.91
		90% Chebyshev(Mean, Sd) UCL	41.39

		95% Chebyshev(Mean, Sd) UCL	50.26
		97.5% Chebyshev(Mean, Sd) UCL	62.57
		99% Chebyshev(Mean, Sd) UCL	86.75
Assuming Gamma Distribution			
90% Approximate Gamma UCL		28.41	
90% Adjusted Gamma UCL		28.65	
Potential UCL to Use	Recommendation Provided only for 95% Confidence Coefficient		

Groundwater Calculations

General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Projects\Port of Portland\Upland Source Control Sites\Shipyard (Swan Is Upland Facility)\Reports and
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Naphthalene - Groundwater, All Wells ($\mu\text{g/L}$)

General Statistics			
Number of Valid Observations	56	Number of Distinct Observations	19
Raw Statistics		Log-transformed Statistics	
Minimum	0.0039	Minimum of Log Data	-5.547
Maximum	0.33	Maximum of Log Data	-1.109
Mean	0.0272	Mean of log Data	-4.114
Median	0.01	SD of log Data	0.841
SD	0.0477		
Coefficient of Variation	1.75		
Skewness	5.162		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.337	Lilliefors Test Statistic	0.381
Lilliefors Critical Value	0.118	Lilliefors Critical Value	0.118
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	0.0355	90% H-UCL	0.028
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	0.0319
90% Adjusted-CLT UCL	0.0385	95% Chebyshev (MVUE) UCL	0.0359
90% Modified-t UCL	0.0362	97.5% Chebyshev (MVUE) UCL	0.0414
		99% Chebyshev (MVUE) UCL	0.0523
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.069	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0255		
nu star	119.7		
Approximate Chi Square Value (.05)	100.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0953	90% CLT UCL	0.0354
Adjusted Chi Square Value	99.98	90% Jackknife UCL	0.0355
Anderson-Darling Test Statistic	7.594	90% Standard Bootstrap UCL	0.0355
Anderson-Darling 5% Critical Value	0.777	90% Bootstrap-t UCL	0.0459
Kolmogorov-Smirnov Test Statistic	0.377	90% Hall's Bootstrap UCL	0.0781
Kolmogorov-Smirnov 5% Critical Value	0.122	90% Percentile Bootstrap UCL	0.0356
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	0.0391
		90% Chebyshev(Mean, Sd) UCL	0.0463
Assuming Gamma Distribution		95% Chebyshev(Mean, Sd) UCL	0.055
90% Approximate Gamma UCL	0.0325	97.5% Chebyshev(Mean, Sd) UCL	0.067
		99% Chebyshev(Mean, Sd) UCL	0.0906

90% Adjusted Gamma UCL 0.0326

Potential UCL to Use	Recommendation Provided only for 95% Confidence Coefficient
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1,2-Dichloroethane (EDC) - Groundwater, All Wells ($\mu\text{g/L}$)

General Statistics

Number of Valid Observations	48	Number of Distinct Observations	5
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Raw Statistics

Minimum	0.25	Minimum of Log Data	-1.386
Maximum	6.3	Maximum of Log Data	1.841
Mean	0.658	Mean of log Data	-1.135
Median	0.25	SD of log Data	0.842
SD	1.393		
Coefficient of Variation	2.116		
Skewness	3.304		

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.328
Shapiro Wilk Critical Value	0.947

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.32
Shapiro Wilk Critical Value	0.947

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

90% Student's-t UCL	0.92
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90% UCLs (Adjusted for Skewness)

90% Adjusted-CLT UCL	0.984
90% Modified-t UCL	0.936

Assuming Lognormal Distribution

90% H-UCL	0.56
90% Chebyshev (MVUE) UCL	0.641
95% Chebyshev (MVUE) UCL	0.725
97.5% Chebyshev (MVUE) UCL	0.843
99% Chebyshev (MVUE) UCL	1.074

Gamma Distribution Test

k star (bias corrected)	0.786
Theta Star	0.837
nu star	75.5

Approximate Chi Square Value (.05)

Adjusted Level of Significance	0.0945
Adjusted Chi Square Value	59.91

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Anderson-Darling Test Statistic	16.71
Anderson-Darling 5% Critical Value	0.788
Kolmogorov-Smirnov Test Statistic	0.56
Kolmogorov-Smirnov 5% Critical Value	0.133

Data not Gamma Distributed at 5% Significance Level

Nonparametric Statistics

90% CLT UCL	0.916
90% Jackknife UCL	0.92
90% Standard Bootstrap UCL	0.899
90% Bootstrap-t UCL	0.972
90% Hall's Bootstrap UCL	0.88
90% Percentile Bootstrap UCL	0.941
90% BCA Bootstrap UCL	0.953
90% Chebyshev(Mean, Sd) UCL	1.261
95% Chebyshev(Mean, Sd) UCL	1.535
97.5% Chebyshev(Mean, Sd) UCL	1.914
99% Chebyshev(Mean, Sd) UCL	2.659

Assuming Gamma Distribution

90% Approximate Gamma UCL	0.825
90% Adjusted Gamma UCL	0.83

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Trichloroethene (TCE) - Groundwater, All Wells ($\mu\text{g/L}$)

General Statistics

Number of Valid Observations	48	Number of Distinct Observations	15
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Raw Statistics

Log-transformed Statistics

Minimum	0.12	Minimum of Log Data	-2.12
Maximum	270	Maximum of Log Data	5.598
Mean	18.67	Mean of log Data	-0.22
Median	0.25	SD of log Data	2.295
SD	50.18		
Coefficient of Variation	2.687		
Skewness	3.554		

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.446	Shapiro Wilk Test Statistic	0.594
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947

Data not Normal at 5% Significance Level

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

Assuming Lognormal Distribution

90% Student's-t UCL	28.09	90% H-UCL	30.2
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90% UCLs (Adjusted for Skewness)

90% Adjusted-CLT UCL	30.61	97.5% Chebyshev (MVUE) UCL	38.66
90% Modified-t UCL	28.71	99% Chebyshev (MVUE) UCL	56.03

Gamma Distribution Test

Data Distribution

k star (bias corrected)	0.228	Data do not follow a Discernable Distribution (0.05)
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Theta Star

nu star

Approximate Chi Square Value (.05)

Adjusted Level of Significance

Adjusted Chi Square Value

Anderson-Darling Test Statistic

Anderson-Darling 5% Critical Value

Kolmogorov-Smirnov Test Statistic

Kolmogorov-Smirnov 5% Critical Value

Data not Gamma Distributed at 5% Significance Level

Nonparametric Statistics

90% CLT UCL	27.95
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90% Jackknife UCL	28.09
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90% Standard Bootstrap UCL	27.92
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90% Bootstrap-t UCL	33.15
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90% Hall's Bootstrap UCL	32.91
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90% Percentile Bootstrap UCL	28.53
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90% BCA Bootstrap UCL	30.73
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90% Chebyshev(Mean, Sd) UCL	40.4
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95% Chebyshev(Mean, Sd) UCL	50.24
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97.5% Chebyshev(Mean, Sd) UCL	63.9
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99% Chebyshev(Mean, Sd) UCL	90.74
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Assuming Gamma Distribution

90% Approximate Gamma UCL	29.28
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90% Adjusted Gamma UCL	29.61
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Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Tetrachloroethene - Groundwater, All Wells ($\mu\text{g/L}$)

General Statistics			
Number of Valid Observations	48	Number of Distinct Observations	2
Raw Statistics		Log-transformed Statistics	
Minimum	0.25	Minimum of Log Data	-1.386
Maximum	0.78	Maximum of Log Data	-0.248
Mean	0.261	Mean of log Data	-1.363
Median	0.25	SD of log Data	0.164
SD	0.0765		
Coefficient of Variation	0.293		
Skewness	6.928		

Warning: There are only 2 Distinct Values in this data

There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.

It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.147	Shapiro Wilk Test Statistic	0.147
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level			
Assuming Normal Distribution		Assuming Lognormal Distribution	
90% Student's-t UCL	0.275	90% H-UCL	0.268
90% UCLs (Adjusted for Skewness)		90% Chebyshev (MVUE) UCL	0.278
90% Adjusted-CLT UCL	0.283	95% Chebyshev (MVUE) UCL	0.286
90% Modified-t UCL	0.277	97.5% Chebyshev (MVUE) UCL	0.298
		99% Chebyshev (MVUE) UCL	0.321
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	24.19	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0108		
nu star	2322		
Approximate Chi Square Value (.05)	2235	Nonparametric Statistics	
Adjusted Level of Significance	0.0945	90% CLT UCL	0.275
Adjusted Chi Square Value	2233	90% Jackknife UCL	N/A
Anderson-Darling Test Statistic	18.16	90% Standard Bootstrap UCL	N/A
Anderson-Darling 5% Critical Value	0.748	90% Bootstrap-t UCL	N/A
Kolmogorov-Smirnov Test Statistic	0.54	90% Hall's Bootstrap UCL	N/A
Kolmogorov-Smirnov 5% Critical Value	0.128	90% Percentile Bootstrap UCL	N/A
Data not Gamma Distributed at 5% Significance Level		90% BCA Bootstrap UCL	N/A
Assuming Gamma Distribution		90% Chebyshev(Mean, Sd) UCL	0.294
90% Approximate Gamma UCL	0.271	95% Chebyshev(Mean, Sd) UCL	0.309
		97.5% Chebyshev(Mean, Sd) UCL	0.33
		99% Chebyshev(Mean, Sd) UCL	0.371

90% Adjusted Gamma UCL 0.271

Potential UCL to Use

Recommendation Provided only for 95% Confidence Coefficient